THE JEFFERSON EDGE TECHNOLOGY STRATEGY WORKING PAPERS

Prepared for

JEFFERSON PARISH ECONOMIC DEVELOPMENT COMMISSION

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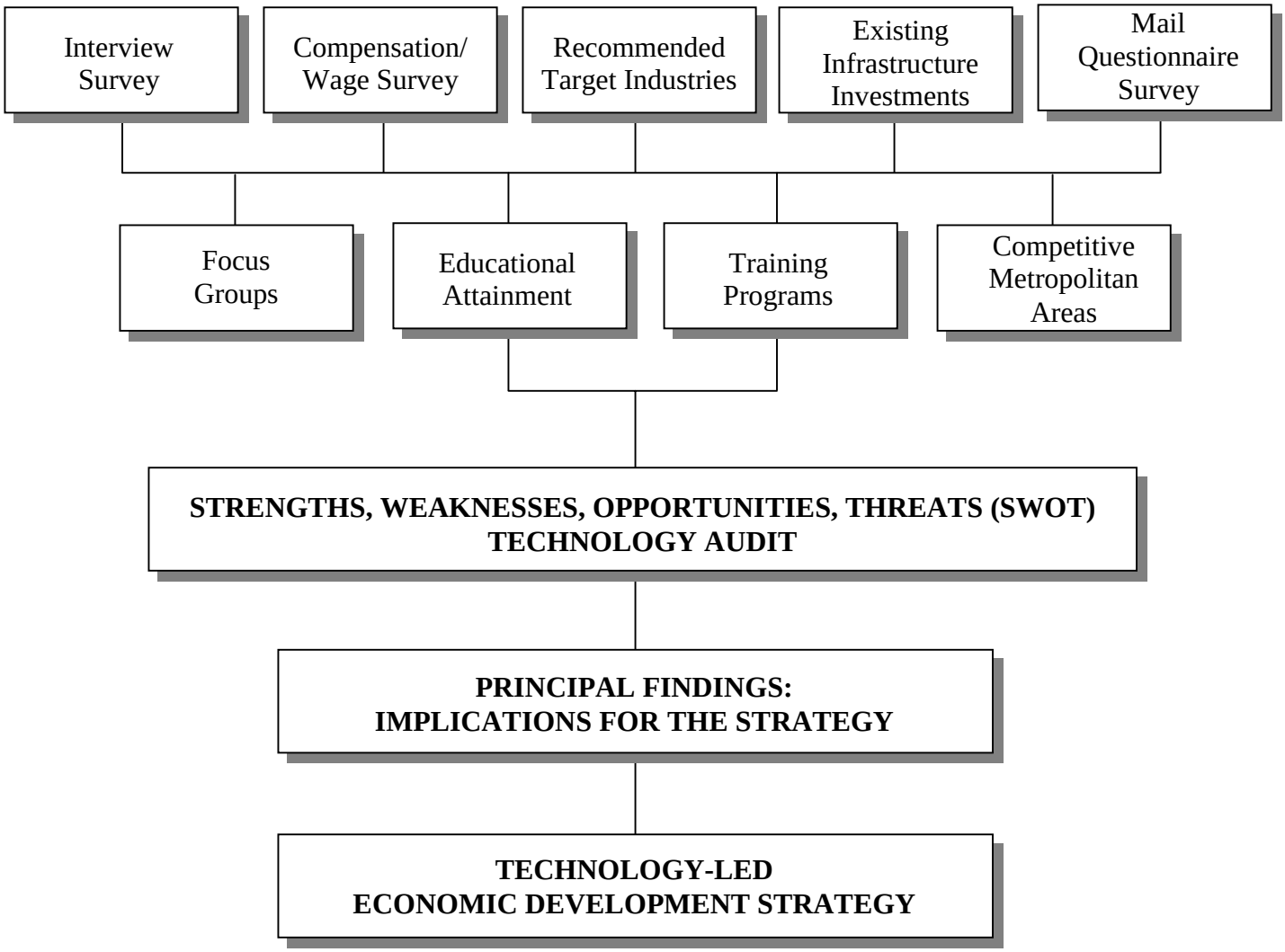
INTRODUCTION

The approach to preparing the optimum technology development strategy for Jefferson Parish called for the preparation of analysis papers on each of the most important technology factors and then the utilization of this information to identify and describe the most important strengths, weaknesses, opportunities and threats facing the Parish as it moves ahead with the strategy.

The organizational and workflow approach to the preparation of The Jefferson Parish Technology Strategy called for the completion of work papers covering the topics listed below, the distillation of these results into a SWOT Analysis/Technology Audit and then the preparation of the technology-led strategy, as described in the diagram below.



The working papers in this volume are organized in eight sections and appendices for each section are found at the end of the document.

Hammer, Siler, George Associates
Silver Spring, Maryland
April 16, 2003

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WORKING PAPER I. RECOMMENDED TARGET INDUSTRIES

JEFFERSON PARISH HIGH POTENTIAL TECHNOLOGY TARGETS

This section of the report will provide insight as to the target technology industries that should be the focus of the technology development strategy for Jefferson Parish. First, we list the individual technology industry sectors which were selected to be the focus of the strategy effort. Then, in the paragraphs which follow, are the results of each of the four approaches we have used in combination to identify the targets with strong potential for the Parish. The first approach identifies the industry types that were recommended in our interviews and surveys with Parish businesses as having strong future growth potential. The second approach entails identifying the growing technology sectors in Jefferson Parish, the New Orleans Metro Area and a multi-state region made up of Louisiana, Alabama, Arkansas, Mississippi and Tennessee, and selecting those sectors showing strength in each. The third approach identifies the technology sectors which are growing in most of the comparable metropolitan areas identified earlier in the work. The fourth approach identifies the key technology institution and/or program anchors in the Parish which are judged to have particular potential to generate technology growth and to identify the technology industry types which will benefit the most by locating near them.

TECHNOLOGY-RELATED INDUSTRIES DEFINITION

The starting point for our analysis in assessing technology industry performance is to define what we mean by "technology-related industry." There is no one precise definition of technology-related industries. Indeed, there are many competing definitions, most of which are focused on the application of specific technologies. For instance, the American Electronics Association generally excludes nearly all advanced manufacturing not related to electronics, bioscience and chemicals. The California-based Milken Institute, on the other hand, includes the motion picture industry in their definition of high-tech.

The goal in any definition of technology is to capture those industries that are highly innovative, strongly focused on research and development and that apply scientific and technical knowledge to advancing new products and services. Thus, the more comprehensive approach to defining technology-related industries is to consider those industries that rely more on R&D activities and employ a higher share of scientific and engineering workers.

The most well grounded approach to defining technology-related industries is by the U.S. Bureau of Labor Statistics (BLS), which considers the share of the workforce in scientific, engineering and computing occupations and the share of employment found in research and development activities. Only those industries with at least twice the average for all industries are considered high tech. Note: The Standard Industrial Classification (SIC) definition below was converted into the new standard North American Industry Classification System (NAICS) for our technology industry growth trends analysis in Approaches 2 and 3.

Nevertheless, even the BLS definition has gaps. Given the dynamic nature of the economy, the BLS definition misses many of the innovative Internet and telecom companies arising in today's "New Economy." BLS also misses many more detailed industries, such as optical media, that are classified under more traditional, mature industry groupings.

The approach we have taken builds off of the BLS definition and adds in newly emerging telecom and Internet-related industries. Table 1 below sets out the full range of industries classified as high technology for this analysis.

TABLE 1. HIGH TECHNOLOGY INDUSTRY CLUSTERS DEFINITION

Advanced Manufacturing

4-Digit SIC Code

2821 Plastics Materials and Resins
2822 Synthetic Rubber
2823 Cellulosic Manmade Fibers
2824 Organic Fibers, Noncellulosic
3511 Turbines and Turbine Generator Sets
3519 Internal Combustion Engines, nec
3531 Construction Machinery
3532 Mining Machinery
3533 Oil and Gas Field Machinery
3534 Elevators and Moving Stairways
3535 Conveyors and Conveying Equipment
3536 Hoists, Cranes, and Monorails
3537 Industrial Trucks and Tractors
3552 Textile Machinery
3553 Woodworking Machinery
3554 Paper Industries Machinery
3555 Printing Trades Machinery
3556 Food Products Machinery
3559 Special Industry Machinery, nec
3561 Pumps and Pumping Equipment
3562 Ball and Roller Bearings
3563 Air and Gas Compressors
3564 Blowers and Fans
3565 Packaging Machinery
3566 Speed Changers, Drives, and Gears
3567 Industrial Furnaces and Ovens
3568 Power Transmission Equipment, nec
3569 General Industrial Machinery, nec
3612 Transformers, Except Electric
3613 Switchgear and Switchboard Apparatus
3621 Motors and Generators
3624 Carbon and Graphite Products
3625 Relays and Industrial Controls
3629 Electrical Industrial Apparatus, nec
3721 Aircraft
3724 Aircraft Engines and Engine Parts
3728 Aircraft Parts and Equipment, nec
3731 Ship Building and Repairing
3732 Boat Building and Repairing
3821 Laboratory Apparatus and Furniture
3822 Environmental Controls
3823 Process Control Instruments
3824 Fluid Meters and Counting Devices
3825 Instruments to Measure Electricity
3826 Analytical Instruments
3827 Optical Instruments and Lenses
3829 Measuring and Controlling Devices, nec
8711 Engineering Services
8712 Architectural Services
8713 Surveying Services

6-Digit SIC Code

3699-02 Electrical Welding Equipment
8731-00 Commercial Physical Research
8734-00 Testing Laboratories

8-Digit SIC Code

8731-0200 Commercial Physical Research
8731-0204 Engineering Laboratory, except Testing
8734-0200 Product Testing Laboratories
8734-0203 Product Testing Labs, Safety or Performance
8734-9902 Calibration and Certification

Aerospace and Defense

4-Digit SIC Code

3482 Small Arms Ammunition
3483 Ammunition, Except for Small Arms, nec
3484 Small Arms
3489 Ordnance and Accessories, nec
3721 Aircraft
3724 Aircraft Engines and Engine Parts
3728 Aircraft Parts and Equipment, nec
3761 Guided Missiles and Space Vehicles
3764 Space Propulsion Units and Parts
3769 Space Vehicle Equipment, nec
3812 Search and Navigation Equipment

Bio Sciences

4-Digit SIC Code

2833 Medicinals and Botanicals
2834 Pharmaceutical Preparations
2835 Diagnostic Substances
2836 Biological Products, Except Diagnostic
3821 Laboratory Apparatus and Furniture
3826 Analytical Instruments
3841 Surgical and Medical Instruments
3842 Surgical Appliances and Supplies
3843 Dental Equipment and Supplies
3844 X-ray Apparatus and Tubes
3845 Electromedical Equipment

6-Digit SIC Code

8731-01 Biological Research
8731-03 Natural Resource Research
8733-01 Noncommercial Biological Research Organization

8-Digit SIC Code

8731-9900 Commercial Physical Research, nec
8731-9902 Medical Research, Commercial

Chemicals

4-Digit SIC Code

2812 Alkalies and Chlorine
2813 Industrial Gases
2816 Inorganic Pigments
2819 Industrial Inorganic Chemicals, nec
2841 Soap and Other Detergents
2842 Polishes and Sanitation Goods
2843 Surface Active Agents
2844 Toilet Preparations
2851 Paints and Allied Products
2861 Gum and Wood Chemicals
2865 Cyclic Crudes and Intermediates
2869 Industrial Organic Chemicals, nec
2873 Nitrogenous Fertilizers
2874 Phosphatic Fertilizers
2875 Fertilizers, Mixing Only
2879 Agricultural Chemicals, nec
2891 Adhesives and Sealants
2892 Explosives
2893 Printing Ink
2895 Carbon Black
2899 Chemical Preparations, nec
2911 Petroleum Refining

Digital Infrastructure	Digital Services
4-Digit SIC Code	***4-Digit SIC Code***
3571 Electronic Computers	4812 Radiotelephone Communication
3572 Computer Storage Devices	4813 Telephone Communication, Except Radio
3575 Computer Terminals	4822 Telegraph and Other Communications
3577 Computer Peripheral Equipment, nec	4841 Cable and Other Pay Television Services
3578 Calculating and Accounting Equipment	4899 Communication Services, nec
3579 Office Machines, nec	7371 Custom Computer Programming Services
3651 Household Audio and Video Equipment	7372 Prepackaged Software
3661 Telephone and Telegraph Apparatus	7373 Computer Integrated Systems Design
3663 Radio and T.V. Communications Equipment	7374 Data Processing and Preparation
3669 Communications Equipment, nec	7375 Information Retrieval Services
3671 Electron Tubes	7376 Computer Facilities Management
3672 Printed Circuit Boards	7377 Computer Rental and Leasing
3674 Semiconductors and Related Devices	7378 Computer Maintenance and Repair
3675 Electronic Capacitors	7379 Computer Related Services, nec
3676 Electronic Resistors	
3677 Electronic Coils and Transformers	***6-Digit SIC Code***
	8748-04 Systems Analysis and Engineering
3678 Electronic Connectors	Consulting Services
3679 Electronic Components, nec	
3695 Magnetic and Optical Recording Media	***8-Digit SIC Code***
	8742-9905 Management Information Systems
3861 Photographic Equipment and Supplies	Consultant
	8748-0302 Telecommunications Consultant
6-Digit SIC Code	
3699-03 Electronic Training Devices	
3699-05 Security Devices	
8-Digit SIC Code	
8731-0300 Natural Resource Research	
8731-0301 Energy Research	
8731-9901 Electronic Research	

Sources: Hammer, Siler, George Associates and US Census

TARGETING APPROACH I: JUDGMENT OF EXISTING PARISH TECHNOLOGY COMPANIES

The firms successfully operating in the Parish today are one indication of potential technology success. Their representatives' judgments as to what other technology business types would be successful in the Parish is highly valued, because they have first-hand knowledge about how the strengths and weaknesses work to establish a competitive operating environment.

Potential Technology Growth Sectors

Industry growth and decline questions were on the personal interview and mail questionnaires. Among the 93 respondents, many indicated prospects for growth in all or part of their business. Their firms' Standard Industrial Classifications are listed below.

TABLE 2. APPROACH I: POTENTIAL TECHNOLOGY GROWTH SECTORS

SIC	Type of Product or Service
1731	Telecommunications Contractor
2834	Mfg Medicinal and Botanical Products
2841	Mfg Industrial Cleaners/Detergents
3556	Food Products Machinery
3625	Mfg Control Systems
3672	Printed Circuit Boards
3822	Mfg Alarm Systems
3829	Mfg Measuring/Controlling Devices
4812	Wireless Voice/Data Computer Networking
7371	Computer Systems Design
7372	Computer Software
7373	Computer Systems Design & Networking
8711	Engineering Services IT Consulting
8734	Testing Laboratories

Source: Hammer, Siler, George Associates Interviews.

TARGETING APPROACH II: TECHNOLOGY GROWTH SECTORS IN THE REGION

This second approach focuses on the growth in the technology sectors described above in the Parish, the Metropolitan New Orleans Area and in the greater multi-state area. Those specific technology sectors growing in the Parish, Metro and Multi-state region, are most certainly important targets and we have called them "primary technology targets." A second set of targets will come from those technology industries that are growing in the Parish and Metro New Orleans or the multi-state area, but not both, and we have called these, "secondary technology targets." A third important category is technology sectors which are growing in the Metro and the multi-state region, but not in the Parish. We refer to these as "bootstrap targets," because the basic growth momentum is present, but there are gaps in the Parish offering to be filled. These are briefly described below:

- Primary Targets - Those in which the Parish, the MSA and the multi-state region are all growing.
- Secondary Targets - Those that are growing in the Parish and the MSA but not the multi-state region.
- Bootstrap Targets - Those that are growing in the MSA and multi-state region but not in the Parish, thus suggesting that there are very local factors which need to be corrected.

TABLE 3. APPROACH II: DATA MATRIX

	Year	Adv. Mfg.	Aero. Def.	Bioscience	Chemicals	Dig. Infra.	Dig. Serv.	Total
Jefferson Parish	1998	65	1	9	37	8	223	343
	2000	61	1	9	44	9	244	368
	1998-2000	(4)	-	-	7	1	21	25
New Orleans MSA	1998	134	3	38	95	12	438	720
	2000	129	2	43	101	13	537	825
	1998-2000	(5)	(1)	5	6	1	99	105
Multi-state Region	1998	2,251	130	519	918	270	5,832	9,920
	2000	2,215	132	597	900	281	6,754	10,879
	1998-2000	(36)	2	78	(18)	11	922	959

Sources: County Business Patterns and Hammer, Siler, George Associates.

Primary Targets. From the table above the industry sectors of Digital Infrastructure and Digital Services can be identified as primary targets. Upon closer inspection of the analysis, NAICS codes 4812 – Cellular & other wireless telecommunications, 7371 – Custom computer programming services, 4813 – Wired telecommunications carriers, and 7379 – Other computer related services in particular should be targeted.

Secondary Targets. There is one sector that meets this criterion and is growing in the Parish and in the New Orleans metro but not the multi-state area: chemicals. More specifically, NAICS code 2911 – Petroleum Refining has shown solid growth in establishments over the last several years.

Bootstrap Targets. Bootstrap targets are those growing in the Region and the Metro, showing locational growth momentum, but where the Parish needs to take additional actions to capture a share of this growth. Specific industry clusters that stand out as bootstrap targets include the following NAICS codes: 8731 – R&D in physical, engineering & life sciences, 4812 – Cellular and other wireless telecommunications, 4899 – Other telecommunications, 7373 – Computer systems design services, and 7374 – Data processing services.

TARGETING APPROACH III: COMPARABLE METROS TECHNOLOGY GROWTH SECTORS

In this approach, eight comparable metro areas were identified and analyzed for technology industry sector growth. These eight metro areas include: Birmingham, Houston, Jackson, Jacksonville, Miami, Memphis, Mobile, and Tampa. For each of the comparables, as well as for New Orleans, technology industry employment trends were generated from County Business Patterns data based on the technology definition given above. The results of that analysis are found in the table below.

As with the regional analysis in Approach II above, this will also yield primary and secondary targets. The primary targets will be those industries in which the technology industry sector is growing in at least 75 percent of the comparable metro areas. A second tier of targets will be

those in which 50 to 75 percent of the comparable metropolitan areas are growing in technology related industries.

TABLE 4. APPROACH III: COMPARABLE METRO TECHNOLOGY SECTOR GROWTH

Cluster	Description		Metros with Employment Growth
Digital Services	4812	Cellular & Other Wireless Telecommunications[1]	89%
Digital Services	7379	Other Computer Related Services	89%
Digital Services	4813	Wired Telecommunications Carriers	78%
Digital Services	7371	Custom Computer Programming Services	78%
Bioscience	8731	R&D in Physical, Engineering & Life Sciences	67%
Digital Services	4812	Telecommunications Resellers	67%
Digital Services	4899	Other Telecommunications	67%
Digital Services	7373	Computer Systems Design Services	67%
Digital Services	7374	Data Processing Services	56%

Notes: [1] SIC 4812 is part of two different growth sectors.

Sources: County Business Patterns and Hammer, Siler, George Associates.

TARGETING APPROACH IV. SPECIAL TECHNOLOGY INSTITUTION-LINKED TARGETS

Another perspective on high probability technology targets, describes the particularly strong technology anchors present in the jurisdiction under study and identifies technology industry types which have a particularly strong existing or potential linkage to these technology anchors. In Jefferson Parish, we judge those anchors to be high tech ship-building, new media technology, and clinical research and technology.

UNO Avondale Maritime Technology Center

The UNO Avondale Maritime Technology Center, located in the Parish, is rapidly emerging as the number one center nationally in high technology shipbuilding. Included is the simulation-based Design Center. A wide range of the top high technology companies in a broad range of technologies are important partners to UNO and Northrop Grumman in this effort as suppliers, competitors, or potential transferors of the technology to other advanced manufacturing sectors.

An important part of the GCRMTC is the Maritime Environmental Resources and Information Center which is providing services to assist in the transfer of technology to the shipbuilding and related industries.

Based on industry analysis and in-depth interviews with key executives, the following technology sectors are judged most likely to be attracted to large or small co-locations.

- 2851 Paints and Allied Products
- 3511 Turbines and Turbine Generators
- 3571 Electronic Computers
- 3625 Relays and Industrial Controls
- 3661 Telephone and Telegraph Apparatus
- 3694 Engine Electrical Equipment
- 3695 Magnetic and Optical Recording Media
- 3731 Ship Building and Repairing
- 3732 Boat Building and Repairing
- 3826 Analytical Instruments
  - 3826-9909 Laser Scientific and Engineering Instruments
- 7371 Custom Computer Programming Devices
- 7372 Computer Integrated Systems Design
- 8711 Engineering Services IT Consulting

UNO Nims Center for Entertainment Arts and Multi-Media Technology

A very rapidly growing sector of the computer software and hardware industry is in the new media sector. Graphic imaging, a broad range of simulation, computer assisted design and related sectors are emerging. The UNO, both at the UNO Avondale Maritime Technology Center and at Robert E. Nims Center for Entertainment Arts and Multi-Media Technology, has the equipment and the staff capability to play a continuing and expanding role in this emerging industry and to attract and/or assist to grow similar firms. Based on industry analysis and in-depth interviews, the following technology sectors are judged most likely to benefit from this resource.

- 7373 Computer Systems Software, Analysis and Design
- 7374 Computer Graphics
- 7812 Motion Picture Production and Distribution

Ochsner Foundation Hospital

The hospital, both because of its own excellence in clinical research and clinical care and because it provides relationships between Parish medical institutions and the Downtown Medical Center and related programs at UNO and elsewhere, forms the third major technology institution resource in the Parish which can lead to technology company locations. Those which have reasonable high potential include:

3841-02 Diagnostic Apparatus
3841-04 Orthopedic Apparatus
3841-05 Medical Instruments and Equipment

CONSENSUS TECHNOLOGY TARGETS FOR THE PARISH

Selecting specific technology industry sectors serves best not to exclude other technology companies, but rather to guide scarce resources available for technology-based economic development toward those technology industry types for which the jurisdiction has strong potential. We have used four approaches here. They can be combined to result in a reasonably high confidence level.

I. Existing Parish Technology Company Judgment

1731 Telecommunications Contractor
2834 Mfg Medicinal and Botanical Products
2841 Manufacture Industrial Cleaners/Detergents
3556 Food Products Machinery
3625 Mfg Control Systems
3672 Printed Circuit Boards
3822 Mfg Alarm Systems
3829 Mfg Measuring/Controlling Devices
4812 Wireless Voice/Data Computer Networking
7371 Computer Systems Design
7372 Computer Software
7373 Computer Systems Design & Networking
8711 Engineering Services IT Consulting
8734 Testing Laboratories

II. Regional Technology Growth Sectors – Primary Targets

4812 Cellular & Other Wireless Telecommunications
4813 Wired Telecommunications Carriers
7371 Custom Computer Programming Services
7379 Other Computer Related Services

III. Comparable Metro Growth Sectors – Primary Targets

4812 Cellular & Other Wireless Telecommunications
4813 Wired Telecommunications Carriers
7371 Custom Computer Programming Services
7379 Other Computer Related Services

IV. Technology Institution Linked

2851 Paints and Allied Products
3511 Turbines and Turbine Generators
3571 Electronic Computers
3625 Relays and Industrial Controls
3661 Telephone and Telegraph Apparatus
3694 Engine Electrical Equipment
3695 Magnetic and Optical Recording Media
3731 Ship Building and Repairing
3732 Boat Building and Repairing
3826 Analytical Instruments (Laser Scientific and Engineering Instruments)
3841-02 Diagnostic Apparatus
3841-04 Orthopedic Apparatus
3841-05 Medical Instruments and Equipment
7371 Custom Computer Programming Devices
7372 Computer Integrated Systems Design
7373 Computer Systems Software
7374 Computer Graphics
7812 Motion Picture Production and Distribution
8711 Engineering Services IT Consulting

Recommended First Priority Technology Sectors

The first priority technology target sectors are those which emerge from at least two of the four identification techniques as primary targets, or were judgmentally added by HSGA because of emerging, not yet fully expressed, strengths.

3511 Turbines and Turbine Generator Sets
3625 Mfg Control Systems
3661 Mfg Telephone Equip Systems
3731 Ship Building and Repairing

3841 Diagnostic and Therapeutic Apparatus
4812 Wireless Voice/Data Computer Networking
4813 Cellular & Other Wireless Telecommunications
7371 Computer Systems Design
7372 Computer Software
7373 Computer Systems Design & Networking
7379 Other Computer Related Services
7812 Motion Picture Production and Distribution
8711 Engineering Services IT Consulting

Characteristics of these first priority target sectors are described below.

3511 Turbines and Turbine Generator Sets. This industry manufactures steam, gas, and hydraulic turbines. Its growth is most sensitive to electricity demand which has caused an increases in the exports of these products. Demand is expected to increase for microturbines whose capacity is less than 100 kilowatts of power. They support the trend toward flexible power generation to capitalize on competition stemming from deregulation. Another potential growth sector is wind turbines which are environmentally friendly and economical. Cogeneration, the simultaneous production of heat and power, is another potential growth sector.

An important part of this industry is replacement parts. The manufacture of original equipment and its replacement parts are more and more dependent on e-commerce to quickly identify suppliers and select and ship their products. In 2000, about $7.7 billion of turbine and turbine generator sets were shipped. An estimated 19 percent of U.S. exports go to Latin America and Mexico.

3625 Manufacture Control Systems. These firms manufacture relays, motor starters and controllers, and other industrial controls. They are used in materials handling, food and beverage, heating and air conditioning, and other industries. Programmable logic controllers, microprocessor-based units that control various functions, can be customized to perform specialized tasks. Their advantages include reduced human involvement in these functions, remote reprogramming, reliability, and low cost.

In 2000, the value of product shipments reached $10.6 billion of which exports were $2.2 billion, or 21 percent. Some 44 percent of these exports went to Latin America and Mexico. Greater dependence on microprocessor units supports growth of this industry which is estimated at 2.4 percent per year. It is expected that growth of exports will be 2.5 times greater than growth of imports to the U.S.

3661 Manufacture Telephone Equipment Systems. This industry includes companies that manufacture telephone and telegraph equipment, modems, and other communications interface equipment. Driven by demand for internet access and mobile telephony, this industry has expanded rapidly. The wireless sector is the fastest growing component of the telecommunications industry. Deregulation of telecommunications services, businesses establishing corporate networks, and unmet demand in developing countries contribute to rapid expansion of manufacturing capacity.

In 2000, the value of telephone apparatus shipments was estimated at $49.6 billion and employment at about 240,000 in the U.S. Growth of telecommunications equipment shipments is forecasted at five percent per year. New technologies will generate growth in network equipment such as optical switching and transmission of high-speed data. In 1998, exports of telephone, radio, and television equipment were $187 billion of which about 17 percent were to Latin America and Mexico.

3731 Ship Building and Repairing. This industry builds and repairs ships, barges, and lighters (large open barges) and manufactures offshore oil- and gas-well drilling and production platforms. This industry is highly dependent on military requirements, increasing ship construction standards, and the fluctuations in fuel prices. Federal Government funding plays an important role in both the military and civilian sectors of the industry. Avondale Shipyard is one of the most important in the country.

New construction, major overhaul, and modernization of military and civilian ships is forecasted to increase. Important components of this growth include increased world trade and demand for

replacement tonnage. To the extent dependence on selected foreign sources of oil is reduced and offshore production is increased, demand for natural resource production platforms is expected to increase.

3841 Diagnostic and Therapeutic Apparatus. This industry manufactures medical, surgical, ophthalmic, and veterinary instruments and apparatus. Advances in the microelectronics, advanced materials, and biotechnology industries have increased innovation in the diagnostic and therapeutic apparatus industry. Increased health care and hospital construction spending have supported growth in demand for this industry's products.

In 2000, shipments of these products were estimated at $20 billion. About 14 percent of the industry's exports were made to Latin America and Mexico. Among the most important future growth sectors are products supporting minimally invasive surgery, home health care, and public health protection. Growth of five to ten percent per year is expected. This forecast is supported by population increases and by its aging, assuming health insurance will be more widely available.

4812 and 4813 Wireless Voice/Data Computer Networking and Wired Telecommunications. Wireless and personal communication services (PCS) services providers have grown rapidly in recent years. These services include advanced messaging, data and video transmission, location technology, and remote monitoring. Most wireline service is controlled by a few companies. Advances have been made in fixed/mobile convergence (FMC) and in internet protocol networks. Price reductions have played an important role in the rapid growth of these markets.

The introduction of digital technology, wider area coverage at lower prices, increasingly sophisticated services, and consumers' preference for untethered service make this industry's prospects for growth good. The number of wireless subscribers and value of wireless services has been forecasted to grow by five to ten percent per year. Even faster growth is forecasted in Mexico and Latin America as a result of system privatization, low development costs, and the

introduction of calling party pays and prepaid services. Growth of telephone access lines is forecasted to support online internet services, home-based businesses, and other telecommunication requirements.

7372 Computer Software. Companies in this industry design and publish software programs, develop electronic commerce technologies, and provide on-line information services. It has been one of the fastest growing industries in the country. This industry allows businesses to cut costs by automating and integrating management and production functions. The industry is characterized by perpetual innovation and short product life cycles which result in a large number of small start-up companies. They often have intellectual resources but lack product development funding and business management experience to commercialize products and services.

The computer software market is forecasted to grow about 15 percent per year. Increasing computer memory and processor speeds have supported growth of the three-dimensional, virtual reality, and speech and physical characteristics recognition market segments. The internet provides opportunities for software publishers and channel partners to rapidly introduce products and services. Therefore, their choice of business location is relatively footloose yet often tied to concentrations of higher education resources.

7371, 7373, 7379 Computer System Design and Networking. These industries provide computer programming services, software design, and training in the use of custom software. The use of these services permeates other industries which are information- or automation-intensive. Growth of these industries is supported by the need to reduce human error and need for security. As a result, system integration, network services, and proprietary data processing are important components of this industry.

Continued improvements in computer system design are expected to support growth in such fields as:

- Teleconferencing and remote learning opportunities.
- On-line retailing, including financial transactions.
- Remote provision of health care and other specialized services.
- Instantaneous retrieval of technical information.
- On-demand document preparation and distribution.
- Just-in-time product shipping.

These services will increase with business establishment and population growth and with improvements in hardware capacity and software sophistication.

7812 Motion Picture Production and Distribution. These firms produce motion pictures and videotapes and are part of the entertainment and electronic media industry. The digital versatile disk (DVD), direct broadcast satellite (DBS), and Internet are growing delivery systems for entertainment programming. Worldwide demand for U.S. entertainment is growing as measured by box office receipts, home video rentals, and recorded music sales. International markets account for about 40 percent of revenues. Prospects for the industry are very favorable.

8711 Engineering Services IT Consulting. In 2000, according to the U.S. Department of Commerce, there were some 60,000 computer hardware, 585,000 computer programmer, 697,000 computer software engineer, and 734,000 computer support specialist and system administrator jobs in the U.S. Computer hardware engineers design, develop, and test computer hardware and supervise its manufacture and installation. This includes computer chips, circuit boards, keyboards, modems, and printers. Computer programmers write, test, and maintain computer instructions. Computer software engineers create and modify software applications. Computer support specialists interpret problems and provide technical support. System administrators design, install, and support computer networks.

The outlook for these jobs is very favorable through 2010. Consulting opportunities will grow as businesses need help managing, upgrading, and customizing complex software and hardware systems. Jobs will be available in data processing services firms, software houses, and computer consulting businesses. As businesses and other organizations seek to maximize the efficiency

and security of their computer systems, employment opportunities will increase in both the public and private sectors.

Recommended Second Priority Technology Sectors

The second priority technology target sectors are those which emerge from only one of the four identification techniques and do not appear to have short-term emerging strengths relative to the Parish's locational advantages.

1731 Telecommunications Contractor
2834 Mfg medicinal and Botanical Products
2841 Manufacture Industrial Cleaners/Detergents
2851 Paints and Allied Products
2865 Mfg Bio-chemicals
2911 Natural Gas Liquid Extraction
3556 Food Products Machinery
3571 Electronic Computers
3672 Printed Circuit Boards
3694 Engine Electrical Equipment
3695 Magnetic and Optical Recording Media
3732 Boat Building and Repairing
3822 Mfg Alarm Systems
3826 Analytical Instruments
3829 Mfg Measuring/Controlling Devices
4899 Other Telecommunications Services
7374 Computer Graphics
8731 R&D in Physical, Engineering & Life Sciences
8734 Testing Laboratories

Jefferson Parish has the opportunity to successfully pursue these target sectors as resources become available to do so.

WORKING PAPER II. INTERVIEW SURVEY

WORKING PAPER II. INTERVIEW SURVEY (TASK THREE)

Representatives of some 23 businesses were suggested by JEDCO as being a good cross-section of technology company perspectives on a number of economic development issues. All of them were contacted by HSGA and personal interviews were conducted with 16 persons representing 15 businesses. Summaries of these interviews are discussed below in terms of location, infrastructure, market changes, labor force, incentives and capital, and other observations affecting their conduct of business in the Parish. A copy of the questionnaire guide and list of interviewees are in the Appendix.

IMPLICATIONS FOR TECHNOLOGY-LED STRATEGY

Strategies responsive to the concerns expressed by interviewees would focus on:

- Upgrading the communications skills of public high school graduates.
- Making the availability and use of incentives more widely known.
- Increasing bridge and road capacities to reduce congestion.
- Perceived difficulty in locating buildings and sites in the Parish for companies interested in relocating or expanding.
- Correction of the image and/or reality of vandalism and other violations of the law of importance to technology companies.

PRODUCTS AND SERVICES OF COMPANIES INTERVIEWED

A wide range of products and services are provided by the technology businesses whose representatives were interviewed. They include:

Cable television installation
Software engineering
Hotel reservations
Telephone and e-commerce services
Business application software
Building services hardware
Oil and gas platform design
Electrical and computer cable boards

Deoxyribonucleic acid testing	Business workflow software
Cell culture testing	Oil and gas safety control systems
Telecommunications job service	Conveyor belt manufacturing

As a result of this variety, their location, infrastructure needs, and labor force requirements often differ.

LOCATION

The most important reasons for selecting a Jefferson Parish location, based on responses of interviewees were:

- Seven said because of good access or less congested than other areas.
- Six said the owner(s) or managers(s) were from the area or live here.
- Six said because of lower rent and/or operating costs.

The most common reason for locating in Jefferson Parish was good highway access and availability of relatively inexpensive building space. The founder or owner being from the area, particularly Southern Louisiana, was another important reason. There seems to be a tendency for natives to want to work in the region. Others came to the region for higher education and stayed or were transferred by their company to the region resulting in them establishing strong business linkages and networks. Lower operating costs were judged another important locational advantage.

Customer and Supplier Locations

Customer and supplier locations have been established over the years because of specialized products or services, professional networking, locations of existing and prospective markets, and preexisting headquarters or branch offices. Telecommunications and multi-modal transportation capacities permit businesses and their customers and suppliers to be more footloose in selecting their locations in the Parish. Relatively unique products (such as plastic conveyor belts) and services (such as multi-national hotel reservations) produced in Jefferson Parish are marketed worldwide.

Site and Building Issues

Problems with locations tend to be specific to the Jefferson Parish neighborhood in which the business is located. To the extent interviewees had problems with their location, the lack of parking and multiple property thefts were the most frequently cited. Inadequate floor space within which to conduct business, traffic congestion, and poor building maintenance were also mentioned as problems faced by technology businesses. The floor space problem was a function of converting building space from retail to technology uses and of growing businesses requiring more room for employees and equipment. Traffic congestion issues centered on not only commutation but also delivery and service calls during business hours. Building maintenance most frequently related to relatively low rent facilities that might be better maintained if the rent was higher.

Often other locations have been considered in response to additional space requirements, lease expiration, commutation, funding, or networking factors. Some of the businesses had modest beginnings and are in need of or expect to be in need of additional building space. To some extent, relocation interest is stimulated by functional obsolescence, a common problem faced by occupants of space adapted to new uses for which it was not designed. In advance of lease expiration, existing building space is reevaluated.

Networking Opportunities

Although most of the interviewees have sunk roots in Jefferson Parish, access to customers and sources of funding were mentioned as reasons to locate elsewhere. Because of Houston's predominance in the oil and gas industry, it is an attractive location to firms serving that field. Access to people who make federal research and product development funding decisions makes the Metropolitan Washington Area an attractive locational consideration for testing firms. Advantages of face-to-face networking by the types of firms located in Jefferson Parish have been considered when making their location decisions.

INFRASTRUCTURE

The key infrastructure issues affecting interviewees were:

- Seven indicated traffic congestion or the need for road or parking improvements.
- Four said their building space was too small.
- Three cited vandalism.

Transportation Systems

For the most part, infrastructure is in-place to serve the needs of businesses whose representatives were interviewed. They depend very little on air or rail services but highway access and capacity are extremely important and got mixed reviews from interviewees. However, the Metropolitan New Orleans Area's sprawl and the small number of bridges across the Mississippi River and Lake Pontchartrain result in traffic congestion. Air services are typically used for time sensitive laboratory tests and for managers' travel requirements and they hope it is improved.

Technology Park Needs

There are mixed feelings about the need for a technology park. JEDCO manages two business incubators located in multi-story buildings. If a new park is developed, it should accommodate professional business services as well as technology firms. A shortcoming of technology-led business development in the Parish has been the availability of these services well suited to supporting specialized technology. A new technology park would provide an alternative location to be considered by those firms facing lease expiration, the need for additional space, and the need for support services. Because of the prospect of higher rents in new buildings in a technology park, representatives of firms indicating the need for space took a wait-and-see attitude toward supporting the technology park idea.

Most of the interviewees' businesses are located on the East Bank. They have established various networks there. Using a standard of over 20 acres for a technology park, it was difficult

to identify a site for one on the East Bank. One business intends to relocate to a 2.5-acre site, located in Metairie, with the assistance of JEDCO. The supply of developable sites having over 20 acres is predominantly on the West Bank whereas most people live on the East Bank.

Telecommunications

Telecommunications services are adequate to excellent except that some buildings are not properly wired or do not allow antennas. Fiber optic service was not identified as a problem by most interviewees because of its availability or because of their interest in going wireless. Widespread use of computers has increased communication capacity to levels needed. Progressively increased capacity is possible in the Parish and may be used by some firms. As the next generation of high speed and relatively inexpensive service is provided, the range of businesses that can be attracted to the Parish will increase.

MARKET CHANGES

Most interviewees believe demand for their product or service will grow because of the:

- General growth in technology applied to their fields of endeavor.
- Reversal of recent economic decline.
- Retrofitting existing buildings and machinery.
- Increased outsourcing by companies.

Examples of businesses interviewees expect to grow include:

- Retrofitting existing and prewiring automated building systems.
- Providing data management and training services.
- Increasing demand for consumer products and services.
- Increasingly sophisticated materials handling and inventory management.

Declines were acknowledged in some products and services because of:

- Job and population decline in the state.
- Corporate business plan changes.
- Reduced demand across the country.
- Bringing outsourced functions in-house.

Compared to some other areas of the country, New Orleans is not an area of strong growth.

LABOR FORCE

Labor force issues that were emphasized by respondents included:

- 13 said better trained workers were needed.
- 13 indicated they either provide in-house training or pay employees to attend class.

Quality of Graduates

For the most part, satisfaction was expressed with graduates of the region's colleges and universities. The same cannot be said of public high school graduates, some of whom lack oral and written communication proficiency. Technical college graduates and attendees employed by interviewees are satisfactory, especially if the college and business jointly prescribe the program of study. Assuming a good grounding in formal education, on-the-job training can be tailored to the businesses' needs.

In-House Training

Nearly all of the companies whose representatives were interviewed provide in-house training or pay for training provided by others. Rapidly changing computer software has placed increased demands on frequent training over short periods of time. Companies which provide specialized products or services sometimes have difficulty finding trained employees. Because some occupations are specialized or uniquely defined by a business, training is provided by the company. Firms generally do not employ interns because they increase overhead.

Salaries and Wages

Among Jefferson Parish technology businesses that were interviewed, the highest wages were generally multiples of three to 14 times the lowest wages in the company. In some companies

base wages are supplemented by customer service expansion or sales commissions. Aside from the owners, chief executive officers and comparable employees, the highest salaries are required to attract and retain computer programmers. Respondents whose companies have programmers may pay well over $80,000 per year for their services. (However, the mean annual wage in the Metropolitan New Orleans Areas for programmers was reported at $51,230 by Bureau of Labor Statistics (BLS) in 2000.)

Prospective employees who are willing to locate anywhere around the country seem to be the most difficult to attract to Jefferson Parish businesses. Pay scales on the east and west coasts are higher than the local experience.

INCENTIVES AND CAPITAL

Often, the businesses interviewed took the initiative to raise capital because:

- Nine said they had not used government incentives or venture capital.
- Four preferred financial privacy or were concerned with having to deal with a bureaucracy.
- Eight used a variety of primarily local and state incentives.

Incentives Utilized

Economic development incentives have been used to a limited extent by the businesses whose representatives were interviewed. Those that have been used which were important to the business included:

- Assistance hiring income qualified people and military veterans
- Real property tax relief
- Job training assistance
- Payroll tax rebate
- State building loan securitization
- Small business seed loan
- Federal research and development tax credit

Attitudes Toward and Needed Incentives

Several interviewees expressed distain for business subsidies for philosophical reasons, the paperwork required, or the preference for corporate privacy. Interest was indicated for subsidized building space and for computer hardware acquisition assistance. The importance of legal, accounting, and personnel recruitment technical assistance was also described.

Venture Capital

Few businesses sought or used venture capital. Personal financing and lines of credit were used by a number of startups. Limited use was made of Certified Louisiana Capital Companies (CAPCO) program which provides tax credits for investing in qualified companies.

OTHER OBSERVATIONS

Interviewees were satisfied by the availability of business services in the Parish except for computer products. Unlike the Metropolitan Austin and Raleigh Areas, New Orleans is not as technically proficient in providing computer maintenance services. The relatively small scale of some portions of the technology sector reduces opportunities for personal networking with knowledgeable people to resolve business problems, particularly among chief executive officers. JEDCO could also support more communications with university representatives, although no specific initiatives were recommended by interviewees. Problems cited with recruitment of employees from outside Louisiana included the climate, reputation of the quality of government, and the prospect for a lower quality of life for new arrivals.

WORKING PAPER III. COMPENSATION/WAGE SURVEY

WORKING PAPER III. COMPENSATION/WAGE SURVEY (TASK FIVE)

Today's technology workforce is highly mobile; the higher the skill level, the wider the income ranges and the greater the leverage on worker discussions.

Relatively lower wage rates help existing companies in achieving price advantages with existing and potential customers; but at the same time make it difficult to recruit additional workers, particularly for high skill level jobs.

This task report compares wages in the Parish with the other jurisdictions in the state and compares the metropolitan New Orleans wage rates for technology occupations with its competitive metropolitan markets and with two northern metropolitan areas.

IMPLICATIONS FOR TECHNOLOGY STRATEGY

The technology sector has been through a sharp downtown caused by capacity expansion over-stimulated by get-rich-quick venture investing which created supply much more rapidly than demand. But the recovery is underway, and with it will come substantial competition to recruit technology workers.

Wages for such workers in Metro New Orleans are low relative to competing metros; and this means that effective education and workforce training in technology skills for the local workforce, preferring to remain in the area, will be very important.

PARISH WAGES RELATIVE TO STATE

Jefferson Parish industry's average weekly wages are only slightly higher than those in Louisiana as a whole in 2000. Many technology jobs are in the services industry where Parish businesses pay, on average, five percent more than those located throughout the state. Comparisons of the Parish's wages by major industry to averages in the state are found in Table 5.

TABLE 5. EMPLOYMENT AND AVERAGE WEEKLY WAGES BY INDUSTRY, JEFFERSON PARISH AND LOUISIANA, 2000

	Jefferson		Louisiana		Wages in Parish as Share of
Industry	**Employment**	**Average Wages**	**Employment**	**Average Wages**	**Louisiana**
Agriculture Forestry & Fishing	1,171	$414.09	17,928	$358.47	116%
Mining	2,802	$951.11	48,159	$1,012.75	94%
Construction	14,909	$611.68	136,369	$586.25	104%
Manufacturing	17,886	$647.30	183,372	$774.78	84%
Transportation Communications and Utilities	13,465	$724.98	130,859	$713.72	102%
Wholesale Trade	17,493	$748.93	95,757	$676.05	111%
Retail Trade	50,378	$318.90	357,302	$288.60	111%
Finance Insurance and Real Estate	12,306	$718.32	84,244	$655.09	110%
Services	78,066	$515.70	708,279	$492.93	105%
Public Administration	6,154	$635.22	103,279	$561.59	113%
Total	214,630	$539.48	1,865,548	$536.36	101%

Note: Includes establishments covered by Louisiana employment security law.

Source: Louisiana Department of Labor.

INDUSTRY WAGE LEVELS IN COMPARABLE METROPOLITAN AREAS

Eight metropolitan areas which compete with the Metropolitan New Orleans Area for technology companies were identified by JEDCO and two others (Baltimore and Portland, OR) were added by HSGA. HSGA recommended occupations representing a broad range of technology companies with which to compare these 10 metropolitan areas to the Metropolitan New Orleans Area. Based on those recommendations, suggestions by JEDCO, and the availability of BLS data, information on 30 technology-related occupations was collected. The detailed mean annual wage information is for 2000 and is provided in Table 6 together with the number of persons employed in that occupation in each of the metropolitan areas surveyed. The shares that Metropolitan New Orleans Area mean annual wages are of those found in the other metropolitan areas are provided in Table 7. Jurisdictions comprising the comparative metropolitan areas are listed in the Appendix.

TABLE 6. OCCUPATIONS AND ANNUAL WAGE ESTIMATES, 2000

Occupation	Baltimore		Birmingham		Houston		Jackson		Jacksonville		Memphis		Miami		Mobile		New Orleans		Portland, OR		Tampa	
	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage
Management																						
Computer and Information Systems Managers	3,440	$80,320	890	$61,880	4,440	$79,630	350	$61,170	1,170	$81,070	960	$69,810	1,860	$74,970	170	$57,540	1,200	$64,920	1,840	$82,340	2,310	$79,500
Engineering Managers	1,870	$82,410	600	$75,330	8,870	$88,260	190	$80,020	590	$80,170	500	$75,590	930	$84,100	260	$78,330	790	$79,490	2,360	$86,770	1,500	$84,020
Computer and Mathematical																						
Computer Programmers	5,250	$54,350	1,810	$48,350	[a]	$76,150	350	$45,350	3,350	$57,820	1,250	$55,830	2,500	$54,750	210	$41,400	1,350	$51,230	2,210	$60,450	5,150	$56,380
Computer Software Engineers, Applications	1,860	$72,800	1,210	$63,190	13,330	$66,230	520	$48,280	1,180	$64,600	730	$59,710	1,280	$56,000	130	$52,840	450	$60,610	3,440	$71,500	4,700	$61,780
Computer Software Engineers, Systems Software	2,760	$71,500	250	$59,120	8,800	$68,660	70	$54,990	820	$70,870	570	$44,350	810	$60,260	NA	NA	[a]	$67,410	2,330	$66,690	2,690	$65,270
Computer Support Specialists	4,130	$40,740	1,500	$34,700	9,720	$48,630	550	$39,780	2,430	$40,370	2,440	$33,760	2,240	$35,950	490	$32,380	1,460	$40,180	9,330	$31,070	3,910	$38,500
Computer Systems Analysts	6,560	$63,480	2,470	$53,700	5,740	$60,190	690	$47,700	2,350	$55,820	1,600	$51,990	2,450	$55,960	170	$53,140	2,090	$50,360	3,370	$58,270	4,060	$60,640
Network and Computer Systems Administrators	2,290	$52,050	560	$47,860	3,980	$52,160	520	$39,040	960	$52,130	680	$53,680	1,480	$50,350	320	$41,290	500	$43,960	2,220	$49,220	1,360	$52,260
Network Systems and Data Communications Analysts	1,550	$59,300	380	$51,870	1,500	$54,800	160	$50,250	1,170	$73,070	440	$49,700	[a]	$55,860	[a]	$42,910	[a]	$56,870	1,470	$54,300	1,140	$60,270
Architecture and Engineering																						
Chemical Engineers	270	$69,410	NA	NA	1,660	$70,110	[a]	$56,830	70	$71,770	130	$65,670	[a]	$56,930	190	$69,800	210	$80,560	[a]	$70,440	70	$60,690
Computer Hardware Engineers	570	$63,920	[a]	$68,340	1,730	$61,320	[a]	$54,150	90	$71,940	220	$39,250	40	$69,860	NA	NA	[a]	$64,600	410	$72,110	350	$66,650
Electrical Engineers	1,330	$71,640	250	$62,800	3,980	$76,550	60	$46,530	140	$58,040	350	$60,570	360	$63,880	150	$62,280	470	$62,530	1,440	$65,440	940	$61,610
Electronics Engineers, Except Computer	1,290	$70,560	[a]	$65,700	1,290	$70,870	NA	NA	260	$56,540	[a]	$56,100	420	$61,610	NA	NA	160	$62,570	910	$58,490	930	$63,970
Industrial Engineers	1,970	$61,610	260	$64,190	3,050	$65,950	50	$43,170	220	$60,140	240	$51,750	550	$59,420	130	$57,320	470	$71,460	2,090	$59,070	960	$60,530
Mechanical Engineers	2,350	$56,750	610	$53,280	11,900	$76,580	70	$49,980	250	$54,070	470	$58,060	470	$50,820	230	$58,480	640	$73,380	1,560	$55,940	910	$58,920
Petroleum Engineers	N/A	N/A	NA	NA	1,960	$85,760	40	$58,850	NA	NA	NA	NA	NA	NA	NA	NA	450	$85,960	NA	NA	NA	NA
Electrical and Electronic Engineering Technicians	640	$46,920	1,070	$38,750	3,380	$38,940	430	$37,400	1,120	$40,780	850	$34,100	2,300	$43,860	340	$37,980	870	$43,830	2,040	$37,320	1,830	$39,690
Surveying and Mapping Technicians	400	$33,290	210	$25,730	1,870	$30,390	40	$32,920	510	$23,410	500	$25,740	200	$29,090	70	$24,670	190	$33,430	700	$34,350	1,640	$26,170
Life, Physical, and Social Science Occupations																						
Chemists	[a]	$54,320	190	$46,330	3,360	$52,190	50	$36,990	340	$43,170	290	$47,770	260	$41,660	[a]	$60,050	300	$55,850	170	$48,400	280	$44,650
Environmental Scientists and Specialists, Including Health	580	$48,130	NA	NA	800	$56,200	160	$37,550	260	$40,860	190	$44,680	170	$46,390	180	$35,460	370	$32,940	280	$45,290	770	$44,330
Agriculture and Food Science Technicians	390	$27,850	NA	NA	NA	NA	NA	NA	[a]	$40,450	40	$31,780	[a]	$20,280	NA	NA	[a]	$18,760	[a]	$32,430	NA	NA
Chemical Technicians	[a]	$38,940	80	$34,490	3,420	$40,660	30	$25,520	190	$32,730	340	$40,090	90	$30,080	270	$35,140	450	$37,040	280	$34,600	230	$36,580
Geological and Petroleum Technicians	NA	NA	NA	NA	[a]	$37,480	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	300	$41,860	NA	NA	NA	NA
Healthcare Practitioners and Technical																						
Medical and Clinical Laboratory Technologists	1,890	$45,020	720	$41,120	2,160	$39,700	480	$37,660	700	$37,360	990	$37,210	1,250	$42,750	250	$40,920	1,060	$37,090	750	$47,370	1,970	$38,790

TABLE 6. OCCUPATIONS AND ANNUAL WAGE ESTIMATES, 2000

Occupation	Baltimore		Birmingham		Houston		Jackson		Jacksonville		Memphis		Miami		Mobile		New Orleans		Portland, OR		Tampa	
	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage
Medical and Clinical Laboratory Technicians	1,690	$31,870	870	$27,320	2,810	$28,120	130	$23,270	270	$25,420	1,240	$25,960	830	$31,100	300	$22,800	410	$22,900	1,310	$31,620	2,180	$26,320
Diagnostic Medical Sonographers	340	$46,510	140	$40,620	580	$42,150	50	$56,480	270	$31,640	210	$42,490	490	$45,160	90	$39,640	230	$38,440	130	$52,680	440	$42,620
Radiologic Technologists and Technicians	1,620	$42,880	680	$36,850	2,720	$37,610	280	$31,960	730	$34,480	900	$33,930	1,640	$36,610	340	$32,300	1,170	$32,420	830	$41,620	1,420	$35,860
Licensed Practical and Licensed Vocational Nurses	3,320	$35,740	2,890	$26,010	8,360	$33,090	1,700	$25,030	2,110	$31,980	2,940	$27,920	6,150	$29,500	1,970	$23,900	4,120	$27,810	1,540	$35,170	6,490	$30,360
Medical Records and Health Information Technicians	1,240	$26,590	870	$20,410	2,570	$22,040	400	$20,910	880	$21,560	650	$21,450	1,290	$27,410	320	$19,890	1,030	$23,820	1,220	$26,280	2,190	$23,380
Office and Administrative Support																						
Data Entry Keyers	4,760	$22,020	1,290	$21,400	5,890	$21,570	850	$20,100	1,950	$20,930	1,800	$20,060	3,870	$22,390	550	$19,660	1,400	$19,550	3,200	$23,070	9,340	$20,000

Notes: [a] Estimates not released due to high relative standard error.
NA means data not available.
Mean means the wages between the smallest and largest amounts.

Source: Bureau of Labor Statistics, U.S. Department of Labor.

TABLE 7. NEW ORLEANS WAGE RATES BY OCCUPATION AS PERCENT OF OTHER METROPOLITAN AREAS, 2000

Occupation	Baltimore	Birmingham	Houston	Jackson	Jacksonville	Memphis	Miami	Mobile	New Orleans	Portland	Tampa
Management											
Computer and Information Systems Managers	81%	105%	82%	106%	80%	93%	87%	113%	100%	79%	82%
Engineering Managers	96%	106%	90%	99%	99%	105%	95%	101%	100%	92%	95%
Computer and Mathematical											
Computer Programmers	94%	106%	67%	113%	89%	92%	94%	124%	100%	85%	91%
Computer Software Engineers, Applications	83%	96%	92%	126%	94%	102%	108%	115%	100%	85%	98%
Computer Software Engineers, Systems Software	94%	114%	98%	123%	95%	152%	112%	NA	100%	101%	103%
Computer Support Specialists	99%	116%	83%	101%	100%	119%	112%	124%	100%	129%	104%
Computer Systems Analysts	79%	94%	84%	106%	90%	97%	90%	95%	100%	86%	83%
Network and Computer Systems Administrators	84%	92%	84%	113%	84%	82%	87%	106%	100%	89%	84%
Network Systems and Data Communications Analysts	96%	110%	104%	113%	78%	114%	102%	133%	100%	105%	94%
Architecture and Engineering											
Chemical Engineers	116%	NA	115%	142%	112%	123%	142%	115%	100%	114%	133%
Computer Hardware Engineers	101%	95%	105%	119%	90%	165%	92%	NA	100%	90%	97%
Electrical Engineers	87%	100%	82%	134%	108%	103%	98%	100%	100%	96%	101%
Electronics Engineers, Except Computer	89%	95%	88%	NA	111%	112%	102%	NA	100%	107%	98%
Industrial Engineers	116%	111%	108%	166%	119%	138%	120%	125%	100%	121%	118%
Mechanical Engineers	129%	138%	96%	147%	136%	126%	144%	125%	100%	131%	125%
Petroleum Engineers	NA	NA	100%	146%	NA	NA	NA	NA	100%	NA	NA
Electrical and Electronic Engineering Technicians	93%	113%	113%	117%	107%	129%	100%	115%	100%	117%	110%
Surveying and Mapping Technicians	100%	130%	110%	102%	143%	130%	115%	136%	100%	97%	128%
Life, Physical, and Social Science Occupations											
Chemists	103%	121%	107%	151%	129%	117%	134%	93%	100%	115%	125%
Environmental Scientists and Specialists, Including Health	68%	NA	59%	88%	81%	74%	71%	93%	100%	73%	74%
Agriculture and Food Science Technicians	67%	NA	NA	NA	46%	59%	93%	NA	100%	58%	NA
Chemical Technicians	95%	107%	91%	145%	113%	92%	123%	105%	100%	107%	101%
Geological and Petroleum Technicians	NA	NA	112%	NA	NA	NA	NA	NA	100%	NA	NA
Healthcare Practitioners and Technical											
Medical and Clinical Laboratory Technologists	82%	90%	93%	98%	99%	100%	87%	91%	100%	78%	96%
Medical and Clinical Laboratory Technicians	72%	84%	81%	98%	90%	88%	74%	100%	100%	72%	87%
Diagnostic Medical Sonographers	83%	95%	91%	68%	121%	90%	85%	97%	100%	73%	90%
Radiologic Technologists and Technicians	76%	88%	86%	101%	94%	96%	89%	100%	100%	78%	90%
Licensed Practical and Licensed Vocational Nurses	78%	107%	84%	111%	87%	100%	94%	116%	100%	79%	92%
Medical Records and Health Information Technicians	90%	117%	108%	114%	110%	111%	87%	120%	100%	91%	102%
Office and Administrative Support											
Data Entry Keyers	89%	91%	91%	97%	93%	97%	87%	99%	100%	85%	98%

Notes: NA means data not available.
Percentages derived by dividing the Metropolitan New Orleans Area's mean annual wage by the competitive metropolitan area.
Mean means the wages between the smallest and largest amounts.

Source: Bureau of Labor Statistics, U.S. Department of Labor.

Employees located in the New Orleans Metropolitan Area generally have lower wages than those in the other 10 metropolitan areas. Except for computer and mathematical and management occupations, New Orleans wages ranked in the lowest 22 percent of the areas surveyed in most of the six major occupation groups, as shown in Table 8. New Orleans most effectively competes with the Metropolitan Mobile and Memphis Areas, from a technology business wages perspective.

TABLE 8. WAGES RANKINGS BY SELECTED TECHNICAL OCCUPATION, COMPETITIVE METROPOLITAN AREAS, 2000

Metropolitan Area	Management	Computer/ Mathematical	Architecture/ Engineering Sciences	Physical and Social Sciences	Health Care	Office/ Administrative
Baltimore	2	3	5	2	2	3
Birmingham	10	8	6	5	7	4
Houston	1	1	1	1	5	4
Jackson	9	10	11	11	6	6
Jacksonville	5	2	8	8	10	7
Memphis	8	9	7	7	8	8
Miami	6	7	10	10	3	2
Mobile	11	11	2	3	11	10
New Orleans	**7**	**6**	**9**	**9**	**9**	**11**
Portland, OR	4	4	4	6	1	1
Tampa	3	5	3	4	4	9

Note: Rankings based on averages of data found in Appendix Table H.

Sources: Bureau of Labor Statistics, U.S. Department of Labor and Hammer, Siler, George Associates.

Within the management category, New Orleans ranks sixth in computer information system and engineering managers' wages. Among computer and mathematical occupations, New Orleans is most competitive for computer software engineers, network systems and data communications analysts, and computer support specialists. The area has among the least competitive wages for computer systems analysts.

Among the architecture and engineering occupations surveyed, New Orleans is especially competitive for chemical, petroleum, and industrial engineers. It falls in the middle of

competing metropolitan areas with regard to electrical, electronics, and computer hardware engineers' mean annual wages. Likewise, New Orleans is among the most competitive areas for chemists' wages. The area is least competitive in the environmental scientist occupation.

Although health care is partly responsible for the New Orleans area's relatively high ranking by Places Rated Almanac, its mean annual wages in the six health care occupations evaluated rank 9th out of the 11 metropolitan areas. It was most competitive for health information technicians and provides average wages to nurses. The occupation evaluated in the office support field was data entry keyers. New Orleans ranks last in this occupation, 18 percent lower than Portland, the highest ranked of the metropolitan areas.

WAGE DATA ON INTERVIEWED FIRMS

These conclusions on relative Parish and Region wages reflected in the State and comparable metropolitan area data were reflected in the response of Parish technology companies on relative wage rate issues as supplied in personal interviews and mail survey responses:

- The lowest wage range, $6.50 to $9.00 per hour, attracted secretarial, call center, and laborer personnel. The highest salaries were for experienced computer programmers, and unusually strong performers whose compensation is partially based on sales and/or profits. Production employees of companies surveyed make $20,000 to $30,000 and engineers over $100,000. Some companies pay employees for continuing education, especially those in the rapidly changing software development field.

- Parish technology companies find they are able to meet their staff needs while paying lower wage rates because there is an abundant supply of potential employees who are attracted to the entertainment atmosphere and quality of life in New Orleans.

- They experience understandable difficulty when attempting to recruit highly trained technology personnel in competition with East Coast and West Coast firms; even though the higher cost of living is known to eat up much of the differential.

- The primary place where the local situation seems out of balance is in terms of computer programmers and related staff, where local firms describe having to pay much more than the average local rate in order to meet their needs and still having difficulty.

CONCLUSIONS

Jefferson Parish and the Metropolitan New Orleans Area successfully attract Louisiana natives into their labor forces. The highest wages are paid to computer programmers and engineers and to chemists and chemical and petroleum engineers. Among the 11 metropolitan areas for which mean annual wages were compared, New Orleans ranks among the lowest 22 percent. Therefore, importing a labor force from those areas must depend on attractions to the area in addition to wages.

Occupational specialties in which the Metropolitan New Orleans Area is especially competitive are:

- Computer Support Specialists
- Network Systems and Data Communications Analysts
- Chemical Engineers
- Industrial Engineers
- Mechanical Engineers
- Electrical and Electronic Engineering Technicians
- Surveying and Mapping Technicians
- Chemists and Chemical Technicians
- Medical Records and Health Information Technicians

Promotion of industries in which these occupations are important is recommended.

WORKING PAPER IV. EXISTING TECHNOLOGY INFRASTRUCTURE INVESTMENTS

WORKING PAPER IV. EXISTING TECHNOLOGY INFRASTRUCTURE INVESTMENTS (TASK EIGHT)

Among the most important factors in attracting and retaining technology companies is the infrastructure available to them. Highway accessibility is important for business-to-business personal contacts and deliveries, airport access, and employee commuting. Scattered sites provide locations for new buildings and fiber optics can provide valuable communication linkages. Access to venture capital can be especially important to expansion stage companies and to early stage companies which attract most of this money. Nationally, concentrations of technology companies tend to be near major research universities which are competitive for research and development funding.

IMPLICATIONS FOR TECHNOLOGY-LED STRATEGY

Key implications to the strategy of the infrastructure supporting the Parish's economic development are:

- Increasing bridge capacity carrying traffic across the Mississippi River is important to access to prospective technology and business park sites located on the West Bank and reduce commutation time of the labor force, a majority of whom live on the East Bank; as well as providing better access to other important technology institutions.

- Increasing air carrier and air cargo capacities of New Orleans International Airport is important for technology companies requiring those services to reach customers and to be reached by suppliers.

- Among Louisiana parishes, Jefferson is well served by fiber optics and there is a good choice among service providers. This service should be promoted to prospective technology companies.

- In the Parish and the Region, seed and startup capital is very limited, and there needs to be much more venture activity. Recent changes in the Certified Louisiana Capital Companies program will increase its use in support of technology startups, but much more needs to be done.

- Strong life sciences research programs at local universities provide growing opportunities for new spin-off technology companies and for collaboration with

existing technology companies. The presence of these institutions is a major asset for the Parish as well.

- Jefferson Parish does not have a technology park or other park providing a fully competitive environment and multi-tenant building space for technology companies.

TRANSPORTATION

Expressways and Major Roads

Jefferson Parish is served by one route, I-10, on the interstate system which connects it to New Orleans, Baton Rouge, and other urban centers. Its interchanges with Causeway and Williams Blvds. and with Clearview Parkway provide the most accessible locations in the Parish. I-10 is an especially important corridor because of its capacity but it is very congested during rush hours. U.S. Highways 61 and 90 also provide accessibility to Orleans Parish and to points to the west. Earhart Blvd. provides controlled access between New Orleans and the Harahan area of Jefferson Parish and, together with U.S. 61 (Airline Highway), is a good alternative to I-10 for east-west travel.

U.S. 90 crosses the Mississippi River at two locations in Jefferson Parish and connects the east and West Banks. The higher capacity bridge crosses the River at Downtown New Orleans. The Huey P. Long Bridge crosses the River between the Elmwood and Bridge City areas of Jefferson Parish. It has narrow lanes and also serves as a railroad bridge. As a result, its capacity is restricted. According to the Regional Planning Commission, this bridge is expected to be widened to six standard lanes by 2013. The Westbank Expressway portion of U.S. 90 extends westward from the east end of the Huey P. Long Bridge. Interstate Highway I-49 designation and improvements are being sought for continuation of U.S. 90 west toward Houston, Texas.

A north-south road at New Orleans International Airport has been proposed to connect Veterans Blvd. and Airline Road utilizing an existing tunnel. It would improve access to the Airport as would the proposed widening of Airline Road from Hickory Avenue westward to St. Charles Parish. Widening Lapalco Blvd. has been underway. These improvements are needed to

continue westward from Barataria Blvd. to Westwood Drive, increasing east-west capacity on the West Bank.

According to the Texas Transportation Institute, traffic congestion in the Metropolitan New Orleans Area is somewhat less than seven other metropolitan areas to which it was compared. In addition, it has the least traffic delay, excess fuel consumed, and congestion cost among these metropolitan areas, as shown in Table 9.

TABLE 9. COMMUTING AND TRAFFIC CONGESTION, SELECTED METROPOLITAN AREAS, 1999

Metropolitan Area	Per Capita: Annual Hrs. of Traffic Delay	Per Capita: Annual Excess Fuel Consumed	Per Capita: Total Congestion Cost	Average System Speed: Freeway	Average System Speed: Arterial	Roadway Congestion Index
Baltimore	44	76	$815	53	31	1.07
Birmingham						
Houston	50	76	$850	44	29	1.10
Jackson						
Jacksonville	30	46	$520	52	30	1.00
Memphis	22	33	$375	52	31	0.98
Miami	42	61	$705	43	28	1.23
Mobile						
New Orleans	**18**	**26**	**$305**	**50**	**30**	**0.99**
Portland, OR	42	73	$795	49	30	1.24
Tampa	35	50	$590	50	28	1.10

Note: Data not provided for Birmingham, Jackson, or Mobile.
Fuel data in gallons.
Speed data in miles per hour.

Source: Texas Transportation Institute.

	Rankings					
Baltimore	2	1	2	1	1	5
Houston	1	1	1	7	6	3
Jacksonville	6	6	6	2	3	6
Memphis	7	7	7	2	1	8
Miami	3	4	4	8	7	2
New Orleans	**8**	**8**	**8**	**4**	**3**	**7**
Portland, OR	3	3	3	6	3	1
Tampa	5	5	5	4	7	3

Air Transportation

Air carrier and cargo services are important to technology firms for meetings located over 200 miles away and for shipments of high value goods or goods that have to reach their destination quickly. New Orleans International Airport is located in Kenner. It is served by 12 air carrier airlines and has nonstop service from 31 U.S. Cities. Southwest Airlines helps insure competitive fares to a growing number of cities.

Compared to 10 other metropolitan areas, New Orleans had the fifth greatest amount of air cargo in 2000, as measured by its weight. The data in Table 10 includes mail and the metropolitan areas are listed in order from the most cargo to the least. The FedEx hub at Memphis and international routes serving Miami increase the amount of cargo they handle.

TABLE 10. AIR CARGO, SELECTED METROPOLITAN AREAS, 2000

Airport	Weight
Memphis	5,485,910,280
Miami	3,620,035,736
Houston	942,727,940
Tampa	215,760,580
New Orleans	**190,325,111**
Portland, OR	162,977,200
Jacksonville	134,327,188
Birmingham	89,749,084
Baltimore	73,231,300
Jackson	36,899,368
Mobile	1,857,972

Notes: Data in pounds enplaned, deplaned, and mail for 2000.
Houston includes the International and Hobby airports.

Source: U.S. Federal Aviation Administration.

TECHNOLOGY COMPANY SITES

Communities with an aggressive technology-based economic development program must have quality sites, operating environments and multi-tenant building space. Jefferson Parish does not have a business and technology park meeting standards that have been achieved in many other communities. Its business incubators occupy portions of floors in two multi-story office buildings located on Causeway Blvd. and the Westbank Expressway. Vacant improved and unimproved sites have been identified as potential technology company locations in the Parish.

Existing Sites

There are no organized technology business parks located in Jefferson Parish. Technology businesses are scattered, most along major highway corridors on the East Bank. Prime locations are along Causeway Blvd, I-10, and Clearview Parkway. I-10 and Earhart Blvd. running east-west, provide good access to the New Orleans International Airport and to Downtown New Orleans, respectively. These scattered sites are less than 20 acres. Development of the East Bank has resulted in few vacant sites of more than 20 acres. Much greater potential exists on the West Bank for a technology park because of the supply of vacant accessible land.

Potential Sites

Technology parks are strongest when they have good expressway or major road access to major technology institutions, commercial airports, clusters of existing technology companies and a range of quality housing. The immediately surrounding environment needs to be in quality development or controllable open space.

JEDCO promotes seven vacant sites having 20 to 77 gross acres potentially available for development and seven others were identified as prospects for technology parks by interviewees. Twelve of the 14 sites are located on the West Bank where development density is lower than the East Bank. Cumulatively, 1,741 acres were identified, all of which have water supplies on-site or

accessible nearby. Most sites have sewerage although plant expansions may be required to service new on-site development, depending on its density. Several sites may require rezoning to accommodate technology business park functions, as indicated in Table 11.

TABLE 11. PROSPECTIVE TECHNOLOGY PARK SITES, JEFFERSON PARISH, 2002

Location	Size	Water	Sewer	Major Highway	Zoning	Remarks
A. Manhattan and Gretna Blvds.	77	Y	Y	Manhattan Blvd.	Mixed Use	Adjacent to retail uses
B. Peters Road at Horace	70	Y	N	Lapalco Blvd.	Industrial	Industrial corridor
C. Peters Road at Bayou Road	30	Y	N	Peters Road	Industrial	Near Boomtown Casino
D. West Bank Expressway at Macarthur Blvd.	20	Y	Y	West Bank Expressway	Industrial	Good access to business services
E. 4th Street at Jung Blvd.	50	Y	Y	West Bank Expressway	Industrial	Rail service
F. Bridge City Avenue at River Road	756	Y	N	U.S. 90	Industrial	Former railroad property
G. Peters and Concord Roads	240			Peters Road	Residential	Near Boomtown Casino. Needs bridge and sewage treatment plant
H. Manhattan Blvd. at 3rd Street	40	Y	Y	Manhattan Blvd.	Residential	Platted lots
I. Behrman Highway at Country Club Drive	64	Y	Y	Behrman Highway	Residential	Former golf course partially in New Orleans
J. Destrehan Avenue at Eastview	200	Y	Y	Destrehan Avenue	Residential	Destrehan to be widened in 2005
K. River Road at U.S. 90	100e	Y	N	U.S. 90	Industrial	Adjacent to Avondale Shipyard
L. Time Saver Avenue at 10th Street	29	Y	Y	Hickory Avenue	Industrial	Existing industrial park
M. Barataria and Lapalco Blvds.	45	Y	Y	Lapalco Blvd.	Retail	Former shopping center
N. Airline Road and George Street	20e	Y	Y	Airline Road	Industrial	Adjacent to airport

Notes: Infrastructure located nearby if not on-site if Y.
Size data in gross acres.
e means estimate.
Site A is part of the South New Orleans Subdivision Tract being master planned by JEDCO.

Sources: JEDCO, Latter & Blum Realtors, Jack Stumpf & Associates, and Hammer, Siler, George Associates.

With over 1,700 acres of vacant sites having good to reasonable access, a nearby water supply, and nearby sewer service for the most part, the Parish is well situated to develop or approve private development of one or more technology parks. While 12 of the prospective sites are located on the West Bank, 60 percent of the Parish's labor force resides on the East Bank. Approaches to and bridges crossing the Mississippi River are congested. The only nearby crossings are via the Huey P. Long Bridge, which serves both vehicular and rail traffic, and the U.S. 90 bridge through Downtown New Orleans. The bridge through Downtown New Orleans provides better service from the West Bank to the region's largest centers of science and engineering research which are located at Tulane University, LSU Health Sciences, and the University of New Orleans.

A wide range of adjacent land uses are found among the prospective technology park sites. They may need to be screened from business and technology park uses to maximize attractiveness to prospective tenants. Business services are located within three miles of all sites. It is necessary to check with real estate brokers or property owners to confirm site availability.

The 14 sites are ranked in comparison to each other based on five locational criteria. The criteria definitions in Table 12 are those factors often cited as influencing the location of a technology company. They support potential collaboration with high technology research and development institutions, multi-modal transportation access, networking with peer companies, and a quality physical setting in which to conduct business. The Parish has underway a technology park site analysis which will assess existing and potential sites for technology companies.

TABLE 12. TECHNOLOGY PARK LOCATIONAL MATRIX, JEFFERSON PARISH, 2002

Site	1	2	3	4	5
A. Manhattan and Gretna Blvds.	4	2	5	4	3
B. Peters Road at Horace	3	2	4	2	4
C. Peters Road at Bayou Road	2	1	3	2	3
D. West Bank Expressway at Macarthur Blvd.	3	2	5	4	3
E. 4th Street at Jung Blvd.	3	3	5	3	4
F. Bridge City Avenue at River Road	2	3	4	4	3
G. Peters and Concord Roads	2	1	3	2	3
H. Manhattan Blvd. at 3rd Street	3	2	4	3	5
I. Behrman Highway at Country Club Dive	2	1	3	3	4
J. Destrehan Avenue at Eastview	3	2	3	2	4
K. River Road at U.S. 90	3	3	5	4	5
L. Time Saver Avenue at 10th Street	2	4	4	5	4
M. Barataria and Lapalco Blvds.	3	2	4	2	4
N. Airline Road and George Street	2	5	4	2	3

Notes: Rankings based on a one (lowest) to five (highest) scale.
Criteria definitions:
1. Proximity to technology institutions (70 percent) and the UNO Avondale Maritime Technology Center (30 percent).
2. Proximity to New Orleans International Airport.
3. Access to an expressway.
4. Access to a cluster of technology companies.
5. Compatibility with adjacent land uses.

Sources: JEDCO, Latter & Blum Realtors, Jack Stumpf & Associates, and Hammer, Siler, George Associates.

FIBER OPTICS SERVICES

There are nine fiber optic network services available to Jefferson Parish businesses, according to Digitallouisiana. They are:

Wiltel
AT&T
Broadwing
PF Net (Koch Energy)
Qwest
Sprint
BellSouth
Level 3/Enron
Cox Communications

They provide high speed internet, data, or voice transmission services. Insolvency and alterations of corporate structures are changing the companies providing these services in Jefferson Parish and elsewhere.

The best served portion of the Parish is Metairie which has 78 percent of the fiber optic cable approved by the Parish since 2000. Nearly 90 percent of Metairie's service was permitted in 2000. In 2001 and 2002, Marrero's service was built, the second highest concentration of fiber optic service provided from 2000 through September of 2002. Prior to that period, some service was provided in Jefferson Parish in the absence of construction application requirements. The Parish does not monitor fiber optic construction or operation to determine the extent to which projects to provide service which are applied for are implemented. Data on recent services permitted by the Parish is provided by municipality in Table 13.

TABLE 13. FIBER OPTIC LINES PERMITTED, JEFFERSON PARISH, 2000-2002

City	2000	2001	2002	Total
Avondale	-	-	1,601	1,601
Gretna	-	-	900	900
Harahan	-	-	480	480
Harvey	-	3,684	3,268	6,952
Kenner	-	690	14	704
Marrero	-	5,590	2,527	8,117
Metairie	72,028	5,617	3,746	81,391
River Ridge	-	-	437	437
Tarrytown	-	4,260	-	4,260
Total	**72,028**	**19,841**	**12,973**	**104,842**

Notes: Data in lineal feet.
2002 data through September.

Source: Jefferson Parish Streets Department.

Significant amounts of long haul fiber service are provided in Jefferson Parish, mostly in the I-10, U.S. 90, Causeway Blvd., and the Illinois Central Gulf and Southern Railway corridors. According to Digitallouisiana, the Parish's service is as good as any in Louisiana because of its capacity, distribution, and relative concentration of businesses requiring the service. The number of T-1 (24 telephone lines) and D-3 (28 T-1 lines) may increase to provide more capacity and faster service. Some technology companies located in the Parish want to have wireless service in the future.

VENTURE CAPITAL

There is very little seed and startup financing serving the region. This is an important disadvantage, as is the limited venture activity.

During the 10.5-year period ending June 30, 2002, 90 deals worth $653.8 million were made by 76 companies in Louisiana. About 46 percent of these investment dollars supported 11 deals in 1999, the high point of venture capital investments in the state. Another 25 percent of the money was made available in 2000, according to the Pricewaterhouse/Venture Economics/NVCA Moneytree Survey. In the meantime, the number of deals, their value, and the number of companies providing funding have declined.

During the April through June period of 2002, one networking and equipment company and one software company located in Louisiana received $8 million of venture capital funding. They were located in Calcasieu and East Baton Rouge Parishes, respectively. No projects were reported during the period in Jefferson Parish.

Personal interviewees and mail questionnaire respondents indicated they have infrequently sought or received venture capital in support of their business enterprises. However, they have used a variety of funding sources:

- State sponsored Certified Louisiana Capital Companies (CAPCOs) mainly funded by insurance companies which receive tax credits for their investments. CAPCO representatives typically receive seats on the benefited company's board. Of the 19 CAPCO's certified since 1992, eight are located in New Orleans and six are in Baton Rouge. This program's legislation and regulations were amended in 2002 to attract seed capital investments in technology startups, an objective not part of the initial program.

- Personal or corporate lines of credit from a financial institution or other corporation.

- From existing corporate or personal financial resources or those of a parent company.

Some respondents expressed an aversion to debt, highlighted financial and company policies, or described the monitoring requirements imposed by venture capitalists as reasons for not seeking this resource for their firms.

UNIVERSITY RESEARCH

Although there are no research or other universities located in Jefferson Parish, seven are in New Orleans and reasonably convenient to important parts of the Parish. Their federally funded research for each of nine academic programs is shown in Table 14. The dominant program is life sciences at Tulane University which attracted $70.3 million and at LSU which attracted $55.8 million of federal research funding in 2000. The third most important research program was engineering at the University of New Orleans (UNO) which attracted $12.5 million in 2000. Of the $174.2 million in federal research funding at the seven institutions, Tulane attracted 52 percent and LSU 32 percent.

TABLE 14. RESEARCH AND DEVELOPMENT IN SCIENCES AND ENGINEERING, JEFFERSON PARISH AREA UNIVERSITIES, 2000

Field	A	B	C	D	E	F	G
Engineering	0	0	$12,492	$6,697	0	$563	0
Physical Sciences	$677	$264	4,698	2,784	$83	256	0
Environmental Sciences	0	0	1,387	1,448	0	229	0
Mathematics	0	0	274	730	0	249	0
Computer Sciences	0	0	203	0	0	138	0
Life Sciences	1,919	0	458	70,301	100	289	$55,793
Psychology	0	0	538	308	0	0	0
Social Sciences	0	0	2,970	2,097	0	0	0
Other Sciences	829	0	0	5,370	0	0	0
Total	**$3,425**	**$264**	**$23,020**	**$89,785**	**$183**	**$1,724**	**$55,793**

Notes: University code:
A Xavier University
B Dillard University
C University of New Orleans
D Tulane University
E Southern University
F Loyola College
G Louisiana State University Health Sciences
Data in thousands of dollars.

Source: National Science Foundation.

New Orleans ranks well among selected metropolitan areas in biotechnology research. When federally funded university research is compared among 10 metropolitan areas, the leader is the

Metropolitan Baltimore Area. The Johns Hopkins University and University of Maryland in Baltimore City are especially strong in life sciences research funding. Among research institutions located in the southern metropolitan areas, Houston's have attracted the most funding. The seven research institutions in the Metropolitan New Orleans Area, for which data is available, ranked 3rd in 2000. Metropolitan area data is summarized in Table 15 and the list of institutions is provided in the Appendix for each metropolitan area.

TABLE 15. SCIENCE AND ENGINEERING RESEARCH AND DEVELOPMENT FUNDING TRENDS, SELECTED METROPOLITAN AREAS, 1995-2000

			1995-2000 Change	
Metropolitan Area	**1995**	**2000**	**Amount**	**Percent**
Baltimore	$1,030,455	$1,157,641	$127,186	12.3%
Houston	$536,780	$736,810	$200,030	37.3%
New Orleans	**$124,536**	**$252,470**	**$127,934**	**102.7%**
Birmingham	$179,071	$233,461	$54,390	30.4%
Miami	$163,656	$180,444	$16,788	10.3%
Portland, OR	$94,608	$149,777	$55,169	58.3%
Tampa	$104,612	$145,397	$40,785	39.0%
Memphis	$16,513	$72,656	$56,143	34.0%
Jackson	$5,594	$12,027	$6,433	115.0%
Mobile	$15,142	$9,865	$-5,277	-34.9%

Notes: Data not available for Jacksonville or for LSU and the University of New Orleans in 1995.
The University of Tennessee Health Science Center data is for 1998.
Dollar data in thousands of 2000 constant dollars.

Sources: National Science Foundation and Hammer, Siler, George Associates.

The principal infrastructure implication of this research funding has been the 56-acre UNO Research and Technology Park adjacent to the campus. Since development began in 1990, 33 acres have been built upon including a business incubator.

CONCLUSIONS

There are important strengths and important weaknesses in the Jefferson Parish technology infrastructure. Bifurcated by the Mississippi River, Jefferson Parish vehicular traffic has only

two bridges to connect its East Bank, where most of its residents live and high technology jobs are located, to its West Bank where most of the developable vacant land is located. The New Orleans International Airport's location in the Parish makes it convenient to technology companies located there. Because the Parish does not have an organized technology park, it does not compete effectively with those jurisdictions which have been marketing such facilities. Thirteen sites have been identified as potential locations for technology companies of which 12 are on the West Bank.

Jefferson Parish is as well served by fiber optics as any place in the state. Most of this service is located in Metairie. An aversion to debt, company policy, and management and equity restrictions instituted by venture capital firms are reason this source of financing has found limited use in the Parish. Jefferson Parish does not have a university, however, substantial amounts of life sciences research is undertaken at Tulane and LSU Health Sciences in New Orleans. The Metropolitan New Orleans Area ranks high in federally funded science and engineering research among the metropolitan areas to which it was compared.

WORKING PAPER V. MAIL QUESTIONNAIRE SURVEY

WORKING PAPER V. MAIL QUESTIONNAIRE SURVEY

HSGA and JEDCO defined industries comprising technology businesses. JEDCO supplied a list of names and addresses of those businesses located in Jefferson Parish. HSGA supplemented that list with additional names and addresses based on the Dun & Bradstreet iMarket database for those businesses reporting over 10 employees. A questionnaire from JEDCO with a cover letter explaining its purpose and importance to the Parish's technology-led economic development strategy was sent to the resulting 559-business list. Because of the low rate of return this questionnaire was modified and sent to those firms which did not respond to the first questionnaire. The questions asked and number of respondents to each question are provided in the Appendix. The 78 responses received through October 17, 2002 are summarized below in terms of location, infrastructure, market changes, labor force, and incentives and capital affecting their conduct of business in the Parish. In some cases more than one response to a question was by provided by respondents.

IMPLICATIONS FOR TECHNOLOGY-LED STRATEGY

Key strategic implications of the mail questionnaire responses are:

- Jefferson Parish is a central location from which southern markets can be reached and it is easy for clients and employees in the Metropolitan New Orleans Area to reach.
- Opportunities to start and grow businesses in Jefferson Parish has been and will continue to be important to the technology sector of the economy. These opportunities should be encouraged with labor force and site development incentives.
- The most competitive locations considered by technology companies are elsewhere in the Metropolitan New Orleans Area. Therefore, Jefferson Parish should maintain or exceed parity with the other parishes in training and supply of sites and promote these attributes.
- Whereas many respondents did not have problems with their current location, some locations are faced with traffic congestion or flooding which require new capital investments.

- Because various computer hardware and software services are growing or expected to grow, special attention should be given to retaining them in the Parish.

- Because the principal workforce issue is finding qualified people and their continued need for education and training, technology businesses need to support public and other education programs.

- Greater use can be made of available incentives. Technical assistance may need to be provided to identify them and assist businesses to qualify for them.

LOCATION

Location questions dealt with reasons for choosing Jefferson Parish, other locations that were considered, and problems that have been experienced with their current location. These questions and the number of responses are provided below.

1. Reason(s) for choosing Jefferson Parish

Close to home, born here	31
Central location, convenient to employees or clients	19
Good business environment, lower crime or taxes	9
Locally owned, bought local company	8
Available building space	4
"N/A" and other	6

The most common reason for locating in Jefferson Parish is the founder or owner is from the area. Other important reasons are convenience to customers and employees, less crime and lower taxes than found in New Orleans, and the availability of building space. Sometimes the building space occupied by technology companies has been adapted from other uses. Some respondents indicated that the business was already located in the Parish when they arrived or was started here and stayed. Good access to Downtown New Orleans was mentioned. A small number of respondents indicated the following reasons supporting their business' location decision:

- Access to water transportation or oil fields.
- Jefferson Parish is easy for businesses to work with.
- Filling a technology company void on the West Bank where few such companies are located.
- Spouse's job located nearby.
- Central time zone providing work day communication access to the east and west coasts.
- Good Catholic schools.

2. Other locations considered

No other place	31
Orleans Parish	19
Other nearby parishes	8
Mississippi Gulf Coast	3
Houston, Texas	3
"N/A" and other	4

Although most businesses did not consider another location, the most commonly mentioned alternative was elsewhere in the Metropolitan New Orleans Area. Among other domestic locations considered were Baton Rouge; Charleston, South Carolina; Chicago; Colorado; Florida; and San Diego. The sole prospective foreign location mentioned by a respondent was Ireland.

3. Please list problems with current location, if any

None	22
Traffic congestion, speeding	14
Flooding, drainage	8
Taxes and government regulations	5

Lack of customers	4
"N/A" and other	2

Many businesses do not have problems with their present location. Those that have problems identified traffic and flooding primarily. They were followed by taxes and government regulations and the lack of customers.

INFRASTRUCTURE

Infrastructure questions centered on the major transportation modes on which the business depends, the availability and use of fiber optics, and other infrastructure needs that may be required.

9. Important transportation services to your business: highway, air, rail, waterway

Highway	48
Air	33
Rail	3
Waterway	1

Infrastructure is in-place to serve most of the needs of businesses whose representatives responded to the questionnaire. Highway access is extremely important, as 48 respondents mentioned its use. Increased road capacity is important in the congested locations. Air service is somewhat to relatively important according to 33 of the respondents who answered this question. Rail service is infrequently used by respondents. Slip dredging was mentioned as a needed transportation improvement by a respondent.

10. Are you currently using fiber optics? If not, is fiber optics accessible at your site?

Do not use fiber optics	45
Use fiber optics	21
Do not have access to fiber optics	21

When asked if they were currently using fiber optics 45 respondents said no and 21 yes. Among the 36 respondents who answered the question, 21 did not have access to fiber optic services, 12 did, and three respondents did not know.

11. Other infrastructure needs

None	18
High speed internet service	5
Increase traffic capacity	3
Provide flood control	2

Most respondents do not have infrastructure needs. Those that do want high speed internet service. Increased traffic capacity and flood control are other infrastructure needs of the businesses that answered this question.

MARKET CHANGES

Five questions sought information on demand for the companies' products and/or services and locations of their suppliers and customers.

4. Product(s) or service(s)

Computer hardware or software	22
Architecture and engineering	12
Web and e-mail consulting	9
Computerized instruments, games	6
Marine equipment or surveying	5
"N/A" and other	17

The products and services provided by respondents were heavily oriented to computer hardware or software. Architecture and engineering companies represented 12 of the respondents and computerized services are important to them. A variety of computer consulting and instrumentation firms were among the respondents.

5. Product(s)/service(s) growing in demand

Web services and data access	10
Custom built computer hardware or software	7
Cable and wiring services	5
Computer network applications and instruments	4
Materials or equipment testing	4
"N/A" and other	10

The products and services which are growing are computer network applications, web services and data access, cable and wiring services, and computerized testing.

6. Product(s)/services(s) declining in demand

Computer hardware or suppliers	9
Computer software and applications support	8

Instruments and controls	5
Communications systems	5
"N/A" and other	16

For the most part, respondents identified sectors of their businesses that are declining rather than suggesting broad declines. Computer hardware suppliers and various applications were most frequently cited.

7. Supplier locations

Throughout the United States	15
Jefferson Parish	12
Texas	8
California	4
Metropolitan New Orleans	3
"N/A" and other	10

Some 15 respondents said their suppliers are located throughout the country. Another 12 depend on Jefferson Parish suppliers and three obtain supplies from a variety of Metropolitan New Orleans Area firms. Texas and California firms are also important to local firms.

8. Customer locations

Metropolitan New Orleans	24
Louisiana	16
Mississippi	11
Throughout the United States	8
Throughout the world	7
"N/A" and other	4

Overwhelmingly, businesses and residents located in New Orleans and elsewhere in Louisiana are the primary customers of respondents. Mississippi is also an important destination of their products and services. They also serve clients in a much broader geographic area.

LABOR FORCE

Responses to the labor force questions identified those firms which have changed the number of employees during the past two years, their salary/wage range, workforce issues that they have faced, and workforce training needs they have.

12. Over the past 24 months, employment has increased/decreased

Increased employment	20
Decreased employment	18
Employment did not change	6
"N/A" and other	4

During the past 24 months 20 firms had increased and 18 decreased employment. Most of the computer equipment and services firms expect the need for adding employees in the future as do the responding representatives of communications systems and automated controls firms. Others anticipating growth include marine products and maintenance, medical equipment and supplies, and chemicals companies. The following occupations were mentioned as ones having job openings:

- Draftsperson
- Sales representative
- Management
- Technician
- Civil engineer
- Architect
- Silk screen operator
- Electronic assembler

General writing and other communication skills were also mentioned as being needed, a deficiency experienced by a few businesses.

13. Salary/wage range

Of the 61 respondents to the salary/wage range question, incomes ranged from $12,000 to $300,000 per year. The lower end of the range was typically from $12,000 to $25,000 per year. The upper end of the range was typically from $50,000 to $100,000 per year.

14. Describe any workforce issues

Not enough qualified people	15
None	12
Need for education and training	5
Need to retain employees	2
Lack of employee motivation	2
"N/A" and other	10

The predominant labor force issue is the inability of some employers to find enough qualified people. On the other hand, a dozen respondents did not have any labor force issues. Better or more education and training is important.

15. Describe any workforce training needs

Computer certification, training	9
Management, finance, or technician skills	9
None	8
On-the-job training	6
Engineering or architecture training	4
"N/A" and other	8

Two types of training rose to the top of specific training needs: computer certification and management and finance skills. A number of other firms do not have training needs or provide on-the-job training.

Genuine training of technicians as compared to only academic exposure to the subject was described by some respondents. The lack of skilled, reliable, motivated workers from local schools was mentioned. It is sometimes difficult to retain qualified workers in the area. Salary, fringe benefits, and wages competition sometimes results in workers jumping among local jobs. Escalating employee insurance costs have increased overhead and become of a financial burden for some companies.

INCENTIVES AND CAPITAL

The three questions on incentives and capital solicited responses on local and state incentives that they have used, incentives that they need, and their sources of venture capital.

16. Have you utilized any local or state incentives? If so which programs?

Few respondents have used local or state incentives. Of the 68 responses, only six had used incentives: the quality jobs credit and sales tax amnesty were specified. The incentives which are needed, according to respondents, were:

- Elimination of the inventory and sales taxes
- Relocation costs
- Labor force training assistance
- Telecommunications and utilities payments
- General technical assistance including available subsidy information

17. Do you need incentives for workforce development, employee expansion, capital expansion, other

Among the three choices of needed incentives provided on the questionnaire, 18 identified workforce development, 17 capital expansion, and 16 employee expansion.

18. Venture capital sources

Three sources of venture capital were identified as having been used: parent company (two respondents), personal debt (7), and local financial institutions (8). Two respondents indicated a need for venture capital.

CONCLUSIONS

Jefferson Parish is generally thought of as a good business location. Many respondents are from the area and like the Parish's access to customers and to the labor force. As in many other metropolitan areas, traffic congestion is the most frequently mentioned problem. Flooding problems are also important to respondents. Over 16 percent of 73 respondents use fiber optic service but its availability was infrequently cited as a problem. There seems to be plenty of band width available on the East Bank but connections are not readily available in all areas.

Jefferson Parish's technology companies produce a wide variety of goods and services. Slightly more businesses increased rather than decreased employment since 2000. Sales prospects are good for computer equipment and services, communications systems, and automated controls firms, and others, according to respondents. By the same token, a variety of businesses are expecting sales declines. These findings are consistent with recent trends. The highest concentration of suppliers and customers is in Louisiana and nearby states. Among occupations for which there were job openings, professional and technical skills were about equally represented. There is a need for reliable and motivated workers who can communicate effectively.

Approximately equal numbers of respondents need workforce development, capital expansion, and employee expansion financial assistance. Among respondents, financial incentives have been used infrequently. The most common sources of operating capital were local financial institutions and incurring personal debt to support the business.

WORKING PAPER VI. STRENGTHS, WEAKNESSES, OPPORTUNITIES, THREATS

WORKING PAPER VI. STRENGTHS, WEAKNESSES, OPPORTUNITIES, THREATS (TASK FOUR)

The primary purpose of the SWOT analysis is to provide guidance to the preparation of the technology-led strategy. This section describes the most important implications of the SWOT analysis.

1. **Need to Address Neutral Technology Image to a Positive One.** New Orleans has much to offer technology companies, but available rankings and contacts with technology companies and economic developers confirm that the area does not have an image as offering the work force, research, tech companies, cluster organizations, technology space and other "buzz" which technology companies seek.

   In our judgment, this situation is made more challenging by the fact that many economic development leaders feel that the vast share of promotional resources should continue to be focused on New Orleans' nation-leading tourist industry. But those existing and emerging urban centers which are achieving greatest technology success are the ones which are successfully projecting the impressive technology things which are happening.

   We must convince the region to do much better.

2. **Need for a Parish Technology Promotional Focus.** The weak and bifurcated Metro promotional effort, makes it even more important that the Parish generate a strong technology image. An important part of the promotional focus of successful technology centers are quality physical and operation environments for technology companies, like technology parks and technology incubators and accelerators. These can likewise become an effective focus for jurisdictional image and branding efforts.

   A Jefferson Parish Technology Park will provide a quality operating environment, but even more importantly will provide the Parish promotional program something to project to the multi-state region and the nation.

3. **Strong Group of Parish Technology Companies Providing Growth.** Our statistical analysis, personal interviews, mail surveys and focus groups confirm that there are an impressive group of technology companies in the Parish and many have growth potential and see growth potential for other firms in their industry sectors.

   Actions must continue to be taken to regularly monitor the needs of these companies and take actions required to facilitate their growth.

4. **Need for Short-term and Longer Term Workforce Strategy.** The Metro ranks poorly relative to its competitors in educational attainment and the Parish does not compare well within the Metro. A longer term strategy is certainly needed, and recommendations will be

made. Clearly, this is not primarily a JEDCO function, but technology-led development marketing success requires that there be a short-term strategy to meet workforce needs, and equally importantly, to project a strong image of this achievement.

5. **Emerging Technology Anchors With Related and Spin-out Potential.** The UNO Avondale Maritime Technology Center, UNO's Robert E. Nims Center for Entertainment Arts and Multi-Media Technology, and the Ochsner Clinic Foundation hospital are important potential sources of spin-out businesses and attraction of suppliers and strategic partners.

   Insuring that there is quality building space to accommodate this related growth will be important.

6. **Strong University Resources to Market.** Technology companies place high priority on having access to university research and technology in their region and New Orleans has a strong and diversified complement of university activity. Much of it is convenient to potential Parish sites. Jurisdictional boundaries are not important to these companies.

   As our projects emerge, major effort must be made to achieve the proper strategic alliances with these academic resources.

7. **Emerging Small Clusters of Technology Companies.** Our surveys and analysis confirm that the Parish has an emerging cluster of biomedical firms and others of advanced engineering firms, which provide an important source of growth potential.

   Again, diagnosing and meeting their needs will be important.

8. **Lack of an Inventory of Attractive and Competitive Technology Sites.** The East Bank shortage and high cost of sites and the more limited appeal of many West Bank sites caused by severely limited bridge capacity make this a serious problem, retarding technology and other growth.

   Accelerating the Huey P. Long Bridge expansion and improvement and placing major emphasis on public-private packaging of quality sites on both sides of the river are essential to the technology growth objectives.

   The airport adjacent properties and the maritime technology area are strong potential locations for near-term considerations.

9. **Opportunity to Tap the Locational Leverage of Quality Technology Company Building Space.** Technology companies often require wet-lab, high capacity fiber, redundant power and other "extra," difficult to finance tenant improvements. It is essential to compete.

   There is virtually none of this space in Metro New Orleans and achieving some in the Parish would create a substantial locational advantage.

10. **Need to Focus Outreach Marketing to Defined Target Technology Sectors.** Our continuing scan of technology programs around the country on which we work or observe, confirms that the greatest marketing success is achieved by focusing on supporting growth of existing technology firms and on outreach marketing efforts to other selected target technology industry sectors.

11. **Opportunity to Capture the Technology Company Cluster Organization Potential.** Those jurisdictions which have had the greatest technology growth success over time are those which have become focal points for the interaction of technology companies, economic development organizations, business-serving professionals, research organizations and others. Although there are folks "poking" at this, no one has occupied the field.

    Again, because there is not a strong Metro technology image, the opportunity for the Parish is substantial.

12. **Need for Short-Term and Longer-Term Transportation Improvements.** With the coming of Southwest, an inter-city travel weakness has become a strength, and improving the Southwest Concourse and other actions to encourage this airline to further increase service is important in the short run.

    We understand the Huey P. Long Bridge improvement and expansion is scheduled to be completed by 2013 (according to the Regional Planning Commission); but it would be highly beneficial if this improvement could be accelerated into the short-run.

    In the longer run, another runway is probably needed, and the construction of light rail from the airport to the Downtown, creating several high quality mixed-use nodes (with a potential technology company component) would make a major improvement in the technology site and building space offering.

PRINCIPAL FINDINGS FROM EACH OF THE SWOT CATEGORIES

The principal findings from each of the seven SWOT categories and the high priority implications for the technology strategy are presented below. The categories are:

A. Workforce Availability
B. Transportation
C. Networking and Technical Assistance
D. Land and Building Supply
E. Financial
F. Image
G. Telecommunications

The importance to the technology strategy of each of the seven categories is defined, the primary sources of information used in the analysis are identified, the high priority implications for the technology strategy are described, and the most important SWOT findings are described in terms of:

- **Strengths**, as used in this analysis, are characteristics of the Parish which are important to success in technology-led economic development, in which the Parish ranks well with competing areas and therefore need to be utilized and built upon to achieve a successful strategy and results.

- **Weaknesses** are characteristics of the Parish which are important to success in technology-led economic development, in which the Parish does not rank well with competing areas and therefore, efforts to improve the absolute and relative quality should be important parts of the strategy.

- **Opportunities** are potential achievements of the effective carrying out of the strategy, combining existing strengths with effective new initiatives and actions.

- **Threats** include competitive actions by other jurisdictions and/or trends of relative deterioration in important Parish characteristics which will limit Parish potential if not effectively addressed.

A. Workforce Availability

Our interviews with technology companies tell us that a very important factor in their success, and thus in their selection of a location or a decision to expand, is their ability to meet their workforce needs. This is true not only at the PhD level but at the full range of technology and technology support occupations. As it relates to attracting new technology firms, this workforce availability factor is particularly important to areas that do not presently have a strong technology image and therefore to the presumption that there is a substantial technology workforce in-place.

The primary sources of workforce information are the education attainment and training programs working papers, the interview and mail survey responses, and the education and SWOT focus groups. Data in Appendix Tables C, D, E, F, I, J, K, L, M, N, O, P, Q, and R was also used in this analysis.

High Priority Implications for the Technology Strategy

Key implications of this analysis for preparation of the technology strategy are:

- **Need to Strengthen Workforce.** The statistical analysis and educator focus groups establish that the output of the Labor Market Area and Parish educational system ranks below those of many competitive jurisdictions. Although employers say the workforce is relatively productive and stable, the level of education and retention of high school students through graduation needs to be increased.

- **Need to Put Workforce Improvement Strategies in Place.** Careful analysis of the educational systems of the competitive communities, and the experience and judgment of our educational consultant, recommend that the system can be much improved by offering more technology courses, increasing business curriculum advisory committees, and expanding teacher mid-career training to maintain their technical competence.

- **Opportunity to Establish Linkages With Strong Technology Institutions.** Comparison with other successful technology development efforts in other communities, demonstrate that linkages between university programs and research initiatives are very important and need to be increased for existing and potential Jefferson Parish businesses. These linkages include curriculum advice, making contemporary equipment available, and providing internships to prospective employees.

- **Reality and Image of Technology Education Excellence for Technology-oriented Students.** Based on the statistical and peer analysis, it is predicted that system-wide upgrading will take time. Assessment of the competitive communities shows that they have addressed similar problems in the interim through the operation of a technology education excellence program, perhaps in a special purpose technology high school or "academy."

- **Lower Wage Rates But High Quality of Life Loyalty.** Analysis of comparative wage rate data for a broad range of detailed technology and total occupations shows that the Parish wage rates are slightly higher than for the state, but much lower than for the competitive communities, and even farther below east and west coast technology centers.

- But equally importantly, technology company interviews and focus groups confirm that there is strong technology employee "loyalty" to the New Orleans quality of life, so although salaries are lower, they have substantial recruiting and retention success.

Most Important Workforce Availability SWOT Findings

Described below are the most important findings of strengths, weaknesses, opportunities, and threats in the workforce availability category.

Strengths

- **Strong University Research Anchors Nearby.** Excellent science and engineering programs are available at universities located in the region. Especially well known are the Louisiana State University (LSU) and Tulane medical schools, the LSU dental school, the University of New Orleans (UNO) and Tulane engineering schools, and Tulane's law school.

- **Strong Preference of Natives to Remain in the Region's Workforce.** Many natives of Southern Louisiana prefer the lifestyle in the Region, according to interviewees. When the market is slow, as it has been in recent months, it is easier to retain the workforce and to attract people who want to come back to the area.

- **Employees Confirm Workforce Productivity.** The Parish workforce is known for good productivity, according to interviewees and focus group participants. This has resulted in retaining employees and increasing their value to employers because of their long tenure.

- **High Parochial Student College Attendance.** There is a high quality of graduates of parochial school systems, over 80 percent of whom go to college. On average, parochial systems' students are better prepared than public systems students.

- **Trainable Workforce.** The workforce is highly trainable. Once qualified employees are found, they are responsive to employers' training requirements.

Weaknesses

- **Salary Differentials Challenge Retaining Workforce.** Before this most recent business downturn, technology companies had trouble retaining people. Salary differentials made it difficult to attract workers from other areas. Among the six clusters of occupations surveyed, New Orleans generally ranked in the lower third of the 11 metropolitan areas. While lower wages result in technology companies having a price advantage, they have greater difficulty attracting people to high skill jobs.

- **Limited Education Attainment Relative to Comparable Metros.** Many high school graduates lack oral and written communication skills, including the ability to successfully represent themselves in interviews, according to people who have interviewed high school graduates. Among competing metropolitan areas, New Orleans has the second highest share of residents who have not completed high school.

- **Jefferson Needs to Improve Educational Attainment.** Among Parishes in the Metropolitan New Orleans Area in the 1999-2000 school year, Jefferson Parish public schools had the highest share of students who dropped out of school, had the fifth highest standardized test composite scores among seven parishes, and the third highest share of students taking remedial courses prior to beginning college work.

- **Some Important Skill Gaps.** Some employers have difficulty finding employees with specific skills (it is costly to train new employees). Examples include machine operators and computer software engineers. Education programs do not exist in the region for all trades. According to focus group participants, there is a need for more cooperation between both the public schools and postsecondary institutions and representatives of businesses to improve worker preparation. This will lead to better qualified graduates.

- **Difficulty Attracting Qualified Workers.** Relatively few applicants are strong candidates for available job opportunities. Hiring new employees can be a time consuming activity for technology company human resource managers.

Opportunities

- **Relatively Long Worker Tenure.** Interviewees expressed satisfaction with employee loyalty in terms of a willingness to get the work done and stay with the company for several years. This reduces the time and expense required to hire and train replacement employees.

- **Wide Range of College Opportunities.** With five two-year and 14 four-year institutions of higher learning located in the metropolitan area, there are many opportunities for the workforce to continue their education. Programs available at these institutions are comparable to those available at institutions in competing metropolitan areas.

- **Establish University Linkages.** Among seven colleges and universities in the area, over $174 million of federally funded research was attracted to their science and engineering programs in 2000. Most of this money was attracted by Tulane and LSU Health Sciences. These resources provide opportunities to establish linkages with Parish technology anchors such as the UNO Avondale Maritime Technology Center,

Ochsner Foundation Hospital, and UNO's Nims Center for Entertainment Arts and Multi-Media Technology.

Threats

- **Prospective Employees Attracted by Higher Wages.** Difficult to retain college graduates and employees who are not loyal to the area's quality of life because average wage rates are lower than competitive areas located outside of Louisiana. As a result, technology jobs which pay more are attractive to recent graduates as well as to existing employees.

- **Strong Competitors From the Coasts.** Even though the cost of living is higher on the east and west coasts, college graduates are attracted to higher pay available at companies located there. Although New Orleans area wage rates are generally in the lower third of competitive metros, its composite cost of living is the third highest among the 11 metropolitan areas evaluated.

B. Transportation

Good accessibility is important to technology companies for the convenience of their suppliers, customers, and employees. The most critical mode is highways because they are used the most frequently by these groups. Public transportation within the region provides commutation capacity and light rail service would encourage higher density nodes at their stations within which technology companies could cluster. Air service is especially important to moving high value freight as well as passenger service to and from distant locales.

The primary sources of transportation information are the infrastructure investments working paper, the interview and mail survey responses, and the SWOT focus groups. Data presented in Appendix Tables S, T, and U were also used in this analysis.

High Priority Implications Technology Strategy

Key implications of this analysis for preparation of the technology strategy are:

- **Favorable Transportation Accessibility and Housing Costs.** Analysis by the Texas Transportation Institute and other sources shows that Metropolitan New Orleans has relatively much less congestion than the competitive cities, and much less than those areas often thought of as the technology centers, like Silicon Valley, Metro Boston and Northern Virginia. There is real leverage in promoting this fact to prospective technology companies. The substantially lower housing cost (fifth highest among the comparable cities and well below the technology nodes) and overall cost of living (third highest, and, again, well below the coastal technology nodes) is also important.

- **Good Highway Access.** Comparison of the Interstate System serving the Parish, shows it to be fully equal with that serving most of the competitive areas. There is excellent interstate highway access to the east, west, and north to reach technology markets and suppliers.

- **Good Air Service.** Comparative analysis of non-stop service to large- and medium-sized cities, shows that New Orleans now has direct service to 32 of these cities, ranking well with the competitive metros, and with a favorable rate structure. Short-term terminal improvement and longer-term runway capacity expansion would further enhance this advantage.

- **River Crossing Limitations.** The bridge capacity serving New Orleans, relative to its population and travel demand is low. This makes the entire Metro Area a much less efficient operating environment and makes the West Bank of the Parish much less competitive.

- **Planned Light Rail Station Technology Centers.** Other technology communities have experienced increases in absolute technology growth and share of the metro total, when efficient transit- served locations were created. The system being planned for New Orleans will clearly take time for financing and construction, but the Parish is preparing for this opportunity by planning for high density, mixed use, real estate development.

Most Important Transportation SWOT Findings

Described below are the most important findings of strengths, weaknesses, opportunities and threats in transportation category.

Strengths

- **Relatively Less Traffic Congestion.** Among competitive metropolitan areas, New Orleans has the least highway traffic delays, excess fuel consumed, and congestion costs. As a result, technology company operating costs may be lower.

- **Strong Multi-Modal Transportation System.** Multi-modal transportation systems are available to move goods, including air and waterborne services, to Central and South America. Among the 11 competitive metropolitan areas evaluated, the Louis Armstrong New Orleans International Airport ranked fourth in air cargo tonnage in 2000.

- **Good Interstate Linkage to Region.** There is good interstate highway service via I-10 to the east and west, I-55 to the north, and I-59 to the northeast. Technology companies can easily reach markets in these corridors.

- **High Quality Low Fare Air Service.** The entrance of Southwest Airlines into Louis Armstrong New Orleans International Airport, which is located in the Parish, provides competitive fares and broader market coverage than had been available. Twelve airlines provide non-stop service to 32 U.S. cities.

- **Parish Centrally Located.** The Parish's central location makes it convenient to technology company clients and employees in the Metropolitan New Orleans Area. This enhances opportunities for face-to-face contacts and reduces the time required to travel to various points in the area.

Weaknesses

- **Limited River Crossings.** The Mississippi River is a barrier to travel between the east and West Banks of the Parish. Traffic is funneled onto only two crossings of which the Huey P. Long Bridge is frequently congested.

- **Key Terminal Needing Upgrading.** The poor condition of the Southwest Airlines' Terminal B is not attractive to visitors and other users. It requires improvements to modern standards.

- **Congestion in Old Industrial Areas.** Rush hour congestion increases freight delivery and commutation times to key technology industry areas, especially those having buildings that were converted from manufacturing and warehouse uses.

Opportunities

- **Important Increase in Bridge Capacity.** There is high potential leverage of increased bridge capacity with the planned widening and modernization of the Huey P. Long Bridge crossing. It will improve access to prospective West Bank technology sites and generally improve accessibility between the east and West Banks.

- **Earhart Blvd. Extension Would Improve Access.** Extension of Earhart Blvd. would improve east-west circulation between the airport and Downtown New Orleans. This will help Jefferson Parish technology companies interface with representatives of other companies and reach the airport faster.

- **Light Rail Linkage of Key Sites From Downtown to Airport.** A proposed light rail line would connect the airport to the Union Passenger Terminal in Downtown New Orleans via the Kansas City Southern and UPT rail rights-of-way. It would improve access to technology business sites and provide opportunities for high density development at station nodes.

- **Important Improvement to North-South Access.** A proposed north-south road would connect Airline Drive to Veterans Memorial Boulevard through a tunnel under an airport runway. It would add traffic capacity in a congested area.

- **Important Time Zone "Centrality".** Located in time zone convenient to suppliers and clients in the eastern and western portions of the country. This allows technology businesses to establish and maintain contacts with more suppliers and customers during the course of a normal business day.

- **Increase Airport Capacity.** Further improvement of air facilities by adding a new runway and positioning the airport to increase the number of Southwest and other low cost carriers' flights could result in better and cheaper service.

Threats

- **Opposition to Airport Expansion.** Perceived negative attitude of host jurisdictions to airport expansion. Kenner and St. Charles and the affected neighborhoods have expressed opposition. This, plus the wetlands encroachment issue, makes expansion difficult.

- **Parking Gaps in Industrial Parks.** Lack of parking supply adjacent to businesses located in old industrial parks. This is especially acute where building uses having lower parking standards have been converted to offices requiring more parking.

- **Better Infrastructure Maintenance Required.** Lack of infrastructure maintenance resulting in deteriorated facilities. Business prospects react negatively to poor maintenance.

C. Networking and Technical Assistance

In rapidly changing technology fields, it is difficult to keep up with new products, information, companies, incentives, and sources of technical assistance. Entrepreneurs often do not have the time or skills to cover all of these bases. They need different information during the evolution of their firm from its product or service idea to a successfully operating entity. JEDCO plays an important role in connecting technology companies to the resources they need to succeed and flourish.

The primary sources of networking and technical assistance information are the education and SWOT focus groups and the interview and mail survey responses.

High Priority Implications for Technology Strategy

Key implications of this analysis for preparation of the technology strategy are:

- **Effective Parish and JEDCO Initiatives.** Our interview and focus group contacts with Parish technology companies revealed that the Parish Government and JEDCO have established the ability and image to work effectively with technology companies, many of which have come to depend on these services.

- **Better Financing Assistance Needed.** Likewise, these contacts revealed that some businesses are having difficulty meeting their financing needs and in fact, do not feel they have a ready source for becoming fully familiar with what public and private sources are available and what actions by them would be most effective to pursue potential sources. They would highly value "hands-on" assistance.

- **Support Cluster Organizations.** Experience of the competitive communities and other technology centers is that an effectively operating cluster organization would be highly beneficial for companies in the Parish. There are region-wide organizations, but few businesses contacted in the Parish are aware of them so there is clearly more that needs to be done. Leadership in the cluster effort is an opportunity for a high visibility in technology marketing. Such organizations bring together companies to

communicate with representatives of education institutions, researchers, providers of professional services, economic development agencies, and suppliers having common interests with them. Participants would meet regularly and communicate via Internet and a central website.

- **Existing Business Support Program.** Contacts with economic development agencies in competitive cities and other technology nodes confirm our own finding that the single most important component of a technology strategy is service to existing companies. The Parish has an active existing business retention program, where firms, including technology companies, are regularly contacted to determine their needs and what JEDCO, the Parish and others can do to assist. Clearly, both the Parish and other city experience supports major priority for this effort.

- **Business Start-up and Growth of Small Companies.** The survey of competitive cities shows that most that are entering into a rigorous technology strategy effort include within it a technology park and a technology incubator. Most of these communities attempt to also put a seed/start-up company venture fund in place, although, without state participation, it is hard to put this high risk lending/investing vehicle in place. These park and incubator efforts provide quality building space and excellent opportunities for networking. JEDCO operates two small business incubators providing office space. There is no incubator at present in the Parish for technology start-ups requiring flex, wet-lab, or light assembly space.

Most Important Networking and Technical Assistance SWOT Findings

Described below are the most important findings of strengths, weaknesses, opportunities, and threats in the networking and technical assistance category.

Strengths

- **Good Images of Parish and JEDCO.** Jefferson Parish and JEDCO are easy to work with and helpful when called upon by businesses. This improves their images and attracts members to JEDCO.

- **Business and Academic Assistance Available.** Business and academic technical resources are available to Jefferson Parish businesses. They include community and technical college course prescriptions to train workers, extension and night school programs, small business assistance, and research results which can be commercialized.

- **Idea Village Good Resource.** Idea Village services include access to professional service networks, introductions to accredited investors, educational forums, and small business technical assistance.

Weaknesses

- **Improved Computer Services Needed.** There seems to be less depth in specialized computer programming and support services than is available in large technology markets, according to digital services interviewees. Trouble shooting expertise and replacement parts are less readily available.

- **Improved Business-Academic Guidance Needed.** There needs to be more communication between business and university program representatives to improve the relevance of education programs and the suitability of their graduates for available jobs. Expansion of business advisory services to academicians would reduce this gap.

- **Need More Widespread Information Dissemination.** There is a lack of information on financing available for business startups and expansions. Some companies are not familiar with available resources.

Opportunities

- **Technical Assistance and Information Available.** JEDCO, MetroVision, and Jefferson Parish Chamber of Commerce resources are available to business prospects and members. Business retention and expansion initiatives are in-place.

- **Fill Business Management Gaps.** Accelerate companies' growth through expanded financing opportunities including counseling, business management and planning, and accounting for small businesses. Opportunities for providing these services vary with the skills already available to companies.

- **Establish Technology Cluster Organizations.** There is an opportunity for technology companies to play a strong role in regional technology cluster organizations. Such organizations typically include representatives of companies, education institutions, researchers, professional services providers, economic development agencies, and suppliers having common interests. Networking meetings may have a speaker on a technology management topic or only provide opportunities for exchanges of information in a less formal setting.

Threats

- **Lack of Idea Exchange Forums.** Rapidly changing computer software and hardware makes it difficult to keep up with technical changes and increases the need

for idea exchange forums among chief executives as well as operating staff members. Such forums would help companies stay abreast of state-of-the-art information.

- **Lack of Management Skills.** Need for legal, accounting, and personnel recruitment technical assistance for startup businesses not having those skills or time to deal with them. According to interviewees, it is difficult and time consuming to find dependable part-time and occasional help on these matters in which company founders do not have skills.

D. Land and Building Supply

The land supply is especially important to existing technology firms needing to expand their operations and to prospective businesses seeking a "greenfield" location. The building supply is important to those firms needing sound space in which to conduct their business. Often these needs are more or less immediate and do not provide time for new construction. Therefore, maintaining an inventory of available sites and buildings is an important component of a technology strategy.

The primary sources of land and building supply information are the infrastructure investments working paper, the interview and mail survey responses, and the SWOT focus groups. Appendix Tables U and Y were also in this analysis.

High Priority Implications for Technology Strategy

Key implications of this analysis for preparation of the technology strategy are:

- **Lack of Competitive Technology Company Sites.** Our field survey, interviews with brokers and developers and JEDCO staff, and other exploration confirm that the Parish does not have the range of quality locations and sites available which exist in the competitive cities and technology centers.

- **Sites Needed Near Technology Anchors.** Perhaps most important is the lack of sites proximate to the UNO Avondale Maritime Technology Center, UNO's Nims Center for Entertainment Arts and Multi-Media Technology, the Ochsner Foundation Hospital, and other technology "anchors."

- **Sites Needed Near Airport.** Our field survey and other analysis shows that there is vacant and underutilized land at various locations around the airport. Convenient

travel to the airport is valued by technology and other companies, just as is the air service itself.

- **No Technology Business Park.** Many technology companies place a high priority on quality building space in a quality environment. Our surveys and interviews show there is presently no technology or business park in the Parish that meets these standards.

- **No Technology Building Space.** There is a lack of sound building space and business parks available to promote to prospects. To appeal to a broad range of technology companies, building space often requires a specialized and costly set of tenant improvements.

- **Need Technology Centers at Transit Stations.** As described under "Transportation," there is an opportunity for development of highly competitive mixed-used technology centers at proposed light rail stations. Clustering at these locations improves opportunities for linkages among companies.

Most Important Land and Building Supply SWOT Findings

Described below are the most important findings of strengths, weaknesses, opportunities, and threats in the land and building supply category.

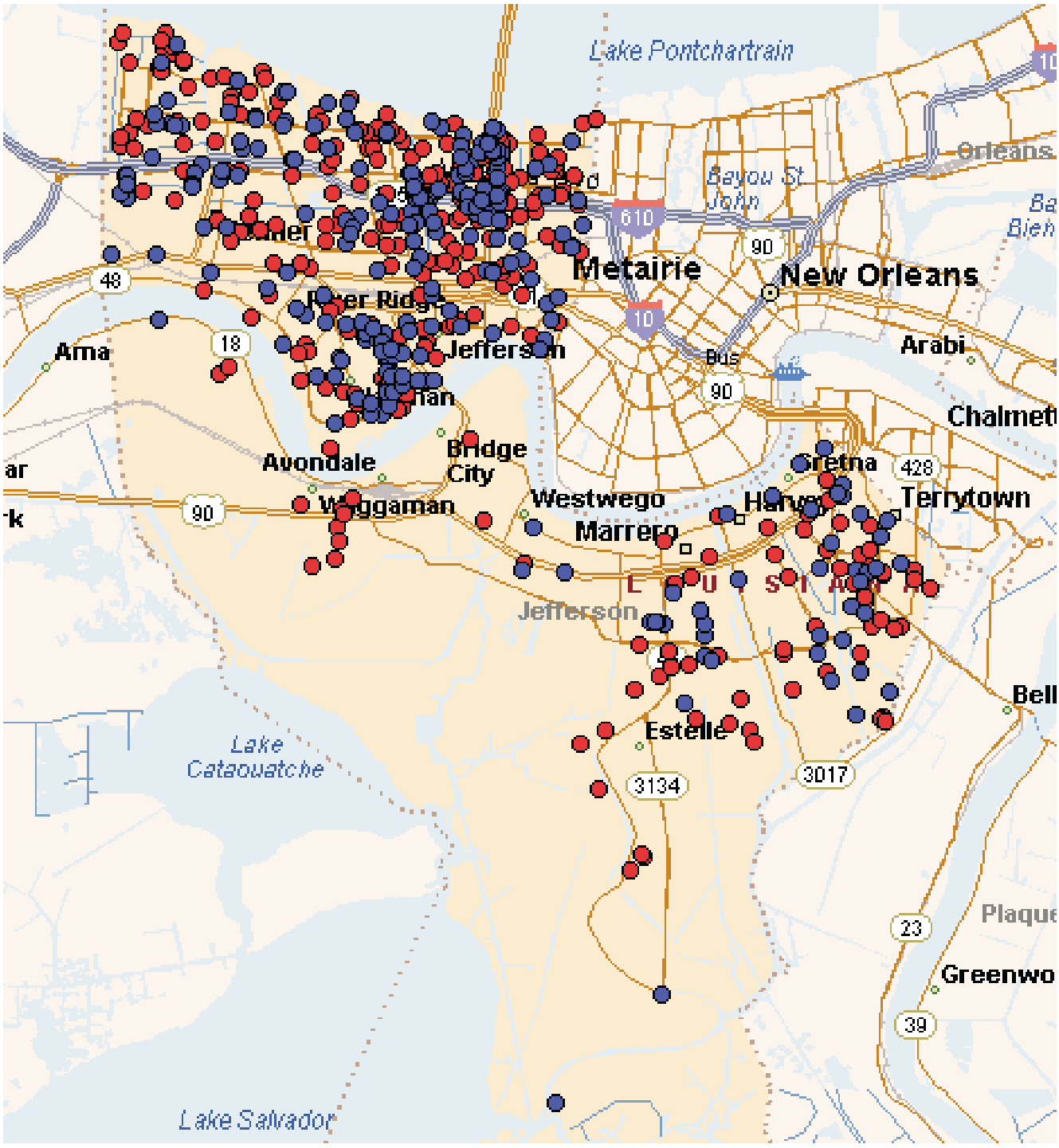
Strengths

- **Sites Available for Technology Parks.** Most developable sites are located on the West Bank where vacant and redevelopment land is available. They provide locations for technology business parks.

- **Sites Near Technology Anchors.** Key public technology-oriented uses are located in the Parish, especially the UNO Avondale Maritime Technology Center, UNO's Nims Center for Entertainment Arts and Multi-Media Technology, and Ochsner Foundation Hospital. Potential development sites exist adjacent to these facilities.

- **Technology Firm Concentrations.** There are concentrations of technology companies in the Parish which increase their access to each other. These concentrations, shown on the map on the following page, support linkages among these firms.

Jefferson Parish Technology Companies



- Information Technology
- Other Technology

Weaknesses

- **No Technology Park.** There is no technology and business park having high development standards. There are no organized business parks on the market in the Parish.

- **Few East Bank Sites Available.** There is a shortage of developable sites for technology companies on the East Bank where most of the workforce lives. Technology employee commutation time to West Bank is greater than to East Bank.

- **Lack of Suitable Building Supply.** There is inadequate floor space in buildings adapted to technology company uses and for growing businesses which started with small floor plates. As a result, some technology businesses have investigated alternative locations outside of the Parish.

Opportunities

- **Developable Sites Identified.** Prime technology park sites in the vicinity of Gretna and other high access locations on the West Bank. An estimated 1,692 acres have been identified at 12 sites on the West Bank and 49 acres at two locations on the East Bank. East Bank properties include land adjacent to the airport.

- **Business Office Incubators Available.** Two business incubators are available for startup companies and are managed by JEDCO. The East Bank incubator has 5,600 square feet configured as 26 offices available at rents starting at $225 per month. It has nine tenants. The West Bank incubator has 5,500 square feet configured as 18 offices available at rents starting at $200 per month. It has four tenants.

- **State-of-the-Art Motion Capture Studio.** To attract film and music video production and advertising agencies to UNO's Nims Center in the Elmwood Industrial Park. Two sound stages having 10,000 and 20,000 square feet are the existing core of the operation.

Threats

- **UNO Research Park.** The supply of vacant sites and building space at this research park has attracted firms from Jefferson Parish.

- **Lack of Sound Building Supply.** Poor building maintenance, especially in low rent structures, causes some technology companies to consider moving. Efforts are needed to assist them to remain in the Parish in suitable quarters.

- **Flood-prone Sites and Buildings.** Flooding (inadequate storm water management), a concern exacerbated by intense storms. Among the metropolitan areas surveyed, New Orleans is the most humid and has an average of 77 days of precipitation annually. Recent major storms are evidence of the need for vigilance and continuing attention to this problem.

- **Limited Available Space Increases Rent.** Some technology companies feel they would grow more rapidly in special purpose space, but do not feel they can afford the rents required in new buildings. The lack of room for expansion and the fact that very little office or technology space is on the market, particularly on the East Bank, may cause out immigration. A result of this space shortfall is that rents in the Parish are higher than in Downtown New Orleans.

- **CBD Building Supply.** The abundance of space available at competitive rents in Downtown New Orleans reduces demand in Jefferson Parish.

E. Financial

Raising equity capital and taking advantage of appropriate available incentives are critical early steps in starting and expanding a technology business. Many technology startups do not have experience in preparation of a business plan and arranging financing for its implementation. They require information and technical assistance to put financing in place. Growing companies need current information on incentive programs applicable to their needs and sometimes need assistance in preparing qualifying paper work.

The primary sources of financial information are the interview and questionnaire survey responses and the SWOT focus groups. Appendix Tables W and X were also used in this analysis.

High Priority Implications for the Technology Strategy

Key implications of this analysis for preparation of the technology strategy are:

- **Eliminate Machinery and Equipment Tax.** Our data on comparable communities confirms that Louisiana places a major competitive burden on its technology companies by being one of the few jurisdictions which has taxes on the purchase of

business equipment and machinery, except for businesses in enterprise zones or research and technology parks.

- **Elimination of Software Sales Tax.** JEDCO staff and focus group participants confirm that the Parish has taken an important step by eliminating the sales tax on software (effective July 2002).

- **Assist Companies Use of CAPCO.** Interviews with companies and economic development staff revealed that the Certified Capital Company program, which provides state tax credits for insurance company investment has not had much benefit for technology companies, but the program was revised in 2002 to provide seed money to the technology industry clusters.

Most Important Financial SWOT Findings

Described below are the most important findings of strengths, weaknesses, opportunities, and threats for the financial category.

Strengths

- **Local Bank Financing.** Some businesses are able to meet their financing needs through local banks. Established relationships with financial institutions support their provision of capital to new and expanding companies.

- **State Incentives Available.** Incentives are available in support of businesses that qualify. They include Louisiana's Quality Jobs (payroll and sales taxes rebate) Program, Economic Development (infrastructure grants and loans) Award Program, research activities corporate income and franchise tax credits, customized software and biotechnology materials and equipment sales tax exemption, film and video production income and franchise tax credits, and CAPCO. The enterprise zone program provides state income and franchise tax credits to a business adding net new employees from targeted socio-economic groups. The one-time $5,000 credit per new job is scheduled to expire in 2006. The inventory tax credit program allows property taxes levied on business inventories to be credited against state income and franchise taxes.

Weaknesses

- **Strings Attached to Venture Capital Supply.** Venture capital firms require too much ownership and control. Loan requirements for high proportions of company

equity and management participation discourage some entrepreneurs from seeking this source of funds. Their availability has declined with the downturn in technology business.

- **Fear Sharing Proprietary Information.** Some businesses are not willing to reveal information necessary to obtain incentives. There is a fear of losing proprietary processes and information to competitors.

- **Burdensome Machinery and Equipment Sales Tax.** The state's nine percent machinery and equipment sales tax is a deterrent to business expansion. This is critical to technology companies which must frequently improve equipment to remain competitive.

- **Difficult to Raise Capital.** According to interviewees, questionnaire respondents, and focus group attendees, expansion of many firms is retarded by the difficulty in raising financing necessary to start and continue operations. This results in under capitalized technology companies and increases their risk of failure.

Opportunities

- **Economic Growth Anticipated.** The pace of orders causes some to anticipate a near-term economic rebound. Businesses could be encouraged to prepare business plan growth scenarios.

- **Provide Seed Financing.** Increase technology start-ups through seed/start-up financing and construction of a technology incubator. The incubator would be a new technology business park anchor.

- **Eliminate Research and Development Sales Tax.** Improve the Parish's competitive position through tax changes. Of special importance to technology firms is the sales tax on research and development expenditures.

Threats

- **High New Building Rents.** New building rents in a technology park are perceived by companies as likely to be too high to induce moves from present locations.

- **Relatively Slow Population Growth.** Slow economic growth of region and state reduces business prospects. Among the 11 metropolitan areas evaluated, New Orleans had the slowest rate of population growth in the 1990s.

- **High Insurance Costs.** High property and health insurance costs contribute to overhead. These costs are expected to continue increasing.

F. Image

The image of the community, and the metropolitan area and state in which it is located, affect technology company location decisions. Companies considering a new location and their advisors maintain qualitative and quantitative images of places they are evaluating. In recent years, image surveys and evaluations by various publications have become more widespread and newsworthy.

The primary sources of image information are the interview and mail survey responses and education and SWOT focus groups. Appendix Tables V, Z, AA, AB, AC, and AD were used in this analysis.

High Priority Implications for Technology Strategy

Key implications of this analysis for preparation of the technology strategy are:

- **Improve Area's Image.** Our economic developer, site location consultant and technology company interviews confirm that New Orleans does not have the image as a resource-rich technology-friendly location.

- **High Quality of Life.** Our competitive city analysis shows that available cultural and recreation resources in the New Orleans Area are much stronger and have a higher image than those in these other areas.

- **Strong University Complex.** Our analysis of the university offering in competitive cities, shows that New Orleans ranked high, third out of eleven cities, in research funding, and had a relatively strong program offering. The relative strength of the university complex is a major part of establishing and maintaining the area's technology resource and development image.

- **Improved Governmental Image.** Interviews with site location consultants and other city economic developers and local technology company comments suggest that while the New Orleans/Louisiana governmental image has not been always strong in the past, it is substantially improving now.

- **Central Location.** Site location consultants see the Parish as an integral part of the New Orleans Area, which is the South Central Region's economic center; and having good access to suppliers and markets. The Metropolitan New Orleans Area attracts many technology business visitors attending conferences and conventions. They would be exposed to technology parks and other offerings in the Parish.

Most Important Image SWOT Findings

Described below are the most important findings of strengths, weaknesses, opportunities, and threats in the image category.

Strengths

- **Nationally Known Entertainment Center.** New Orleans is an exciting entertainment center which is attractive to a broad spectrum of people. Jefferson Parish is located close to businesses and entertainment venues in the Downtown area.

- **Good Cultural Resources.** Compared to the metropolitan areas surveyed, New Orleans has good cultural offerings including major museums, performing arts facilities, and libraries. They are attractive to prospective technology company managers and location specialists.

- **Good Recreation Resources.** There are many recreation opportunities for residents both indoors and outdoors. New Orleans has two major league teams and 32 golf courses. They are good selling points when attracting prospective technology businesses and employees.

- **Lower Crime Rate.** According to the Federal Bureau of Investigation, Jefferson Parish's violent crime rate is seven percent lower than that of the Metropolitan New Orleans Area.

Weaknesses

- **Poor Climate.** The Area is well known for rain and humidity. This affects location decisions of some technology businesses and prospective employees.

- **Not a "Hot Bed" of Technology Companies.** Lack of critical mass of high technology companies of a scale that provides a full range of technology services companies. The image of technology centers such as Silicon Valley, Boston, Raleigh, and Austin is one of having more technology services.

- **Relatively High Metropolitan Crime Rate.** There is a high crime rate relative to competing metropolitan areas. New Orleans had the fourth highest property crime rate and the sixth highest violent crime rate in 2000 among the 11 metropolitan areas evaluated.

Opportunities

- **Improved Image Ranking.** In 2000, the area achieved a high and improving rating by Places Rated Almanac, 21st out of 324, compared to the other metropolitan areas evaluated. There is the opportunity to include this information in promotion materials.

- **Improved Government Image.** Improvement of the region's government image by making positive changes could become part of technology business promotion.

- **Gateway to Central and South America.** Enhance image as gateway to Central and South America. Promote access to prospects which may find market opportunities in those areas.

- **Within Reach of South Central Region Markets.** Capitalize on good South Central Region market position to reach suppliers and customers. Promote business opportunities in Texas, Arkansas, Mississippi, Alabama, and Tennessee to the Parish's existing businesses and new prospects.

Threats

- **Competitors' Marketing Initiatives.** Other Southeast communities with aggressive marketing programs. The competing metropolitan areas have strong marketing initiatives and incentives.

- **Crime Publicity.** Physical property thefts from technology businesses produce negative publicity.

- **Political Corruption.** The Metropolitan New Orleans Area's reputation for political corruption in many areas is well known. National media coverage only reminds audiences of this problem.

G. Telecommunications

Fiber optic services are important to technology companies whose products and services are dependent on high volumes of information exchange. In Jefferson Parish several companies provide these services in multiple corridors. The services are more widely available in the Metairie area and other East Bank communities than on the West Bank.

The primary sources of telecommunication information are the infrastructure investments working paper, the interview and mail survey responses, and the SWOT focus groups. Data presented in Appendix Table Y was also used in this analysis.

High Priority Implications for Technology Strategy

Key implications of this analysis for preparation of the technology strategy are:

- **Impressive Telecommunication Capacity and Needs.** Analysis of Parish fiber optic construction permit data, discussions with permitting staff and consultation with telecommunications consultants, confirms that substantial telecommunications capacity is available in the Parish. However, the lack of information on where fiber service is available is a hindrance to marketing and the cost of bringing service directly to the business can still be onerous.

Most Important Telecommunications SWOT Findings

Described below are the most important findings of strengths, weaknesses, opportunities, and threats in the telecommunications category.

Strengths

- **Teleplex Enhances Telecommunications.** A new teleplex to serve the region with two public television start-ups combining production facilities, digitizing, and offering a wider range of services to businesses enhances the area's telecommunications capacity.

- **Fiber Optic Services Choices.** There are nine fiber optic carriers providing choices of service as good as any in the state to technology companies located in the Parish. Technology companies have access to service in several corridors and can select carrier best servicing their needs.

- **High Speed Internet Available.** High speed internet access readily available in many portions of the urbanized area. Nearly 20 miles of fiber optic lines have been permitted by the Parish since 2000. About 80 percent is located in Metairie.

Weaknesses

- **Competition Reduces Available Information.** Proprietary cable location and capacity information makes it difficult to identify levels and choices of service. The Parish does not monitor installation following approval for it to be built.

- **Lack of Information for Planning.** There is a lack of information available for planning technology park locations in the Parish. To the extent telecommunications service is a locational factor, this information should be made available to the Parish.

Opportunities

- **Most Service Available in Metairie.** The high service level in Metairie provides opportunities for business growth. The Parish has detailed information on permitted service.

- **Provide Service to Future Technology Park.** JEDCO can work with carriers to bring more service to the Parish, particularly to those sites available for technology parks. Service extensions to the West Bank may be needed to enhance the competitiveness of sites.

Threats

- **Lack of Antenna Permission.** Managers of some buildings do not permit antennas. This could cause some businesses to seek a location outside Jefferson Parish.

- **Required Building Retrofitting.** Some buildings are not properly wired for existing and prospective telecommunications services. Retrofitting may help the Parish retain existing businesses that are not yet served.

- **Plan for Expanded Service.** There are still some areas of the Parish that are not served. JEDCO can help plan for the priority future locations.

WORKING PAPER VII. ASSESS EDUCATIONAL ATTAINMENT

WORKING PAPER VII. ASSESS EDUCATIONAL ATTAINMENT (TASK SIX)

This working paper assesses the educational attainment of the Jefferson Parish and Metropolitan New Orleans Area workforce. Available data was rigorously analyzed, and very important inputs came from focus groups and interviews with over 25 leaders in the Parish and Metro New Orleans education. In addition, the Area is compared to 10 other metropolitan areas, and the Parish is compared to seven other parishes comprising the Metropolitan New Orleans Area. In addition to analyzing data on the preparedness of the workforce, this section describes deficiencies of the workforce's education and skills within the context of existing and future employers' demands for them. After assessing the educational attainment database, changes to improve workforce and conclusions are summarized. Analysis of these findings will be followed by recommendations for corrective actions as part of the technology-led economic development strategy the implications for which are listed below.

IMPLICATIONS FOR TECHNOLOGY STRATEGY

Key implications to the strategy of this educational attainment analysis are:

- **Need to Upgrade Skills.** Improvements in attaining the communication, mathematics, and reading skills of people entering the technology workforce from high school are required to supply employees who can immediately discharge job responsibilities.

- **Selling Technology Careers.** Representatives of technology businesses need to devote more time to communicate the advantages of technology careers and to influence high school students to take technical courses and to graduate in order to attain the skills needed for local technology jobs.

- **High Dropout Rate Reduces Skill Levels.** The relatively high dropout rate of New Orleans Area high schools reduces the number of entry level people available to technology companies having basic skills expected of them.

- **Test Scores Are Key Skills Indicator.** The low average test scores of New Orleans Area students are an indicator of less preparation for either the work force or successful college education.

- **Relatively Low Education Attainment Reduces High Skilled Labor Force Pool.** Compared to competitive metropolitan areas, New Orleans has relatively fewer people with college degrees. Therefore, the labor force pool of college graduates available to technology companies is smaller than those companies should expect.

- **Student Poverty Rate Reduces Available Learning Resources.** Students from low income households have fewer supplementary books and magazines and less equipment available to aide in their education experience. The New Orleans Area ranks high on this index.

- **Jefferson Parish Schools Have Negative Indexes in the Region.** Among the public school systems in the New Orleans Area, Jefferson Parish ranks high in the dropout rate, participation in the free lunch program, and remedial course participation. These measures need to be reduced in order to increase the share of the labor force that are good candidates for employment by the Parish's technology companies.

- **Continuing Employee Training.** Metropolitan New Orleans Area technical community colleges, colleges, and universities should promote their continuing education opportunities available to full-time technology company employees to encourage them to improve their skills by increasing their education attainment.

IMPORTANT INFORMATION SOURCES

Three recent analyses were reviewed prior to assembling data for this assessment: 1) Workforce Needs Assessment, February 1, 2001; 2) Industrial Concentration and Specialization Scan for the Metrovision Regional Economy, The Foundation for a Cluster-Based Strategy, February 2002; and 3) Workforce Needs Assessment II, High Growth Companies, November 2001.

In order to quantify resident education attainment levels and skills by parish, the District Composite Reports for 1995-2001 supplied by the Louisiana State Department of Education were used for data pertaining to the public high schools. For comparison, similar data was acquired from state departments of education of 10 other metropolitan areas.

Educational attainment data was obtained from the Bureau of the Census, U.S. Department of Commerce. Additional data was obtained from the National Center for Educational Statistics Common Core of Data (CCD) and Integrated Postsecondary Education Data System (IPEDS), the Higher Education Directory, and Easy Analytic Software.

Six focus groups were held in the JEDCO offices that consisted of educational representatives from public and private secondary schools, technical colleges, community colleges, four-year colleges, universities, private training providers, leaders from the business and industry community, and representatives of the Workforce Investment Boards.

METROPOLITAN AREA COMPARATIVE ANALYSIS

The Metropolitan New Orleans Area is first compared to competitive metropolitan areas with regard to key educational attainment measures: dropout rates, average standardized test scores, years of school completed, higher education institutions and enrollment, expenditures per student and relative number of teachers, and the share of non-English speaking students. The ranking of Metropolitan New Orleans compared to rankings of the other 10 metropolitan areas is provided.

Dropout Rates

Data on the proportion of high school students who dropout, provided in Table 16, shows that the New Orleans rate is among the highest among the 11 areas. Among the many reasons for dropping out, inability to complete the work and financial need are important. Dropouts miss educational opportunities and reduce the overall educational attainment of the labor force. To the extent dropouts are employed by technology companies, they may face extra costs for remedial training necessary to make them productive.

TABLE 16. HIGH SCHOOL DROPOUT RATES, COMPETITIVE METROPOLITAN AREAS, 1998-2000

Metropolitan Area	1999-2000	1998-1999
Baltimore	4.3%	4.6%
Birmingham	14.8%	n/a
Houston	1.6%	1.6%
Jacksonville	4.5%	4.3%
Memphis	5.4%	7.0%
Miami	5.2%	6.7%
Mobile	16.7%	n/a
New Orleans	**7.9%**	**8.4%**
Portland, OR	n/a	6.5%*
Tampa	3.3%	4.9%

Notes: n/a means data not available.
* Data for the state of Oregon.
Higher rankings indicate a less well prepared workforce.

Sources: State Department of Education for each of the seven states.

	Rankings	
Baltimore	7	6
Birmingham	2	-
Houston	9	8
Jacksonville	6	7
Memphis	4	2
Miami	5	3
Mobile	1	-
New Orleans	**3**	**1**
Portland	-	4
Tampa	8	5

Standardized Test Scores

Both the American College Test (ACT) and Scholastic Aptitude Test (SAT) are standardized tests used by colleges and universities in their application evaluation processes. Most colleges and universities have a minimum score requirement for acceptance into the institution. Lower test scores result in it being more difficult to get into college. Data in Table 17 shows that the Metropolitan New Orleans Area scores were lower than all other metropolitan areas, with the exception of Memphis, during the two years for which comparable data is available. For those

two years, the rates for Memphis and New Orleans are within less than half a percent of each other. High school students in the Baltimore and Portland Metropolitan Areas consistently achieved the highest scores among the 11 areas. Representatives of Workforce Investment Boards who participated in focus groups feel education is not perceived to be a priority in the State.

TABLE 17. STANDARDIZED TEST AVERAGE COMPOSITE SCORES, COMPETITIVE METROPOLITAN AREAS, 1997-2001

Metropolitan Area	2000-2001	1999-2000	1998-1999	1997-1998
*Baltimore	22.7	21.8	22.1	21.5
Birmingham	20.1	20.1	20.1	19.7
Houston	n/a	20.2	20.1	20.1
Jackson	n/a	n/a	n/a	21.1
Jacksonville	20.9	21.0	21.2	21.2
Memphis	n/a	18.5	18.3	18.4
Miami	19.2	19.4	19.4	19.8
Mobile	n/a	19.5	21.0	21.0
New Orleans	**18.8**	**18.9**	**18.7**	**n/a**
*Portland	22.5	22.6	22.4	n/a
Tampa	21.0	21.2	21.1	21.5

Notes: n/a means data not available.

* Both the Baltimore and Portland areas use the Scholastic Aptitude Test (SAT) as the predicator of college success. These scores have been converted to the American College Test (ACT) scores for purposes of this comparison.

Higher scores and rankings indicate more high school students are better prepared for college and the workforce.

Sources: State Departments of Education.

			Rankings	
*Baltimore	1	2	2	1
Birmingham	5	6	6	8
Houston	-	5	6	6
Jackson	-	-	-	4
Jacksonville	4	4	3	3
Memphis	-	10	10	9
Miami	6	8	8	7
Mobile	-	7	5	5
New Orleans	**7**	**9**	**9**	**-**
*Portland	2	1	1	-
Tampa	3	3	4	1

Years of School Completed

As the number of years of school completed increases, the number of jobs for which the individual is qualified generally also increases. Accordingly, the pool of people valuable to technology firms and available to teach their skills to others is expanded as the number of years of education increases. The New Orleans Metropolitan Area ranks high in the proportions of residents who have attained the lowest four educational levels and low in the proportions who have attained the highest three levels of education. The shares of the population having completed each of these seven levels of education by 2000 are shown in Table 18. Because of these lower completion rates, there is a greater need for adult education in New Orleans than most of the other areas evaluated. Continuing education of the workforce can be a drain on technology company resources and on employees' time.

TABLE 18. EDUCATIONAL ATTAINMENT AS A PERCENTAGE OF POPULATION, COMPARATIVE METROPOLITAN AREAS, 2000

Metropolitan Area	Less Than 9th Grade	9th to 12th Grade, No Diploma	High School Graduate (Includes Equivalency)	Some College, No Degree	Associate Degree	Bachelor's Degree	Graduate or Professional Degree
Baltimore	5.4%	12.7%	27.1%	20.2%	5.4%	17.3%	11.9%
Birmingham	5.9%	13.5%	28.1%	22.2%	5.6%	16.2%	8.5%
Houston	11.2%	12.9%	22.3%	21.6%	4.8%	18.2%	9.0%
Jackson	5.9%	12.9%	22.8%	24.0%	6.4%	18.4%	9.7%
Jacksonville	4.1%	12.2%	29.1%	24.1%	7.5%	15.5%	7.4%
Memphis	6.4%	13.8%	27.9%	23.9%	5.2%	14.9%	7.8%
Mobile	6.0%	15.8%	31.3%	21.6%	5.5%	12.9%	6.9%
New Orleans	**7.4%**	**14.9%**	**28.4%**	**22.6%**	**4.2%**	**14.4%**	**7.4%**
Portland, OR	4.3%	8.3%	23.4%	27.5%	6.7%	20.0%	9.9%
Tampa	5.2%	13.3%	30.0%	22.4%	7.3%	14.3%	7.3%

Notes: Data not provided for Miami.
Higher rankings in the categories representing more education indicate a more highly qualified workforce.

Source: Bureau of the Census, U.S. Department of Commerce.

Rankings

Baltimore	7	8	7	10	7	4	1
Birmingham	5	1	5	7	5	5	5
Houston	1	6	10	8	9	3	4
Jackson	5	6	9	3	4	2	3
Jacksonville	10	9	3	2	1	6	7
Memphis	3	3	6	4	8	7	6
Mobile	4	1	1	8	6	10	10
New Orleans	**2**	**2**	**4**	**5**	**10**	**8**	**7**
Portland, OR	9	10	8	1	3	1	2
Tampa	8	5	2	6	2	9	9

Although there is a large number of residents who are very well educated, the percentage of the population educated at the Bachelor's Degree level or higher is relatively low. Looking at the combined areas of Bachelor's Degree and higher, New Orleans ranks 8th out of the 10 MSAs for which data was available. With just over 48 percent of its population educated beyond the high school diploma, the New Orleans area ranks 7th of the 10 areas.

Small Share with Associate Degrees. It is significant that New Orleans ranked last in the share of the population having completed an Associate Degree because, according to the U.S. Department of Labor, 65 percent of future technology jobs will require one- to two-years of college. An important economic development objective is increasing the proportion of residents having graduate or professional degrees because of their importance to increasingly sophisticated technology companies and because of the opportunities for research collaboration with universities they represent.

Higher Education Institutions and Enrollment

The enrollment capacity of higher education institutions is an indicator of not only the breadth of course offerings but also access to those courses by residents, including mid-career training opportunities. New Orleans ranks 4th in number of four-year higher educational institutions and 5th in the number of students enrolled in those institutions. Most of the four-year institutions provide graduate level instruction. The area is ranked 7th in number of two-year colleges and 8th in the number of students enrolled in those colleges.

Strong Higher Education Offering. As a result, there are plenty of higher education opportunities available to Metropolitan New Orleans Area residents and technology employees. Data on the number of higher education institutions and their enrollment is provided in Table 19. Metropolitan New Orleans Area institutions are listed in the Appendix.

TABLE 19. HIGHER EDUCATION INSTITUTIONS AND ENROLLMENT, COMPETITIVE METROPOLITAN AREAS, 2001

	Two-Year		Four-Year	
Metropolitan Area	**Number**	*Enrollment*	**Number**	**Enrollment**
Baltimore	9	55,426	20	88,792
Birmingham	6	13,215	8	27,274
Houston	17	116,375	14	85,279
Jackson	2	15,811	10	17,912
Jacksonville	3	30,515	10	21,482
Memphis	5	14,520	12	29,455
Miami	15	92,796	20	87,974
Mobile	3	7,806	5	17,029
New Orleans	**5**	**15,478**	**14**	**54,172**
Portland, OR	7	56,889	16	35,868
Tampa	7	38,344	14	62,837

Source: The 2002 Higher Education Directory published by Higher Education Publications.

			Rankings	
Baltimore	3	4	1	1
Birmingham	6	10	10	8
Houston	1	1	4	3
Jackson	11	7	8	10
Jacksonville	9	6	8	9
Memphis	7	9	7	7
Miami	2	2	1	2
Mobile	9	11	11	11
New Orleans	**7**	**8**	**4**	**5**
Portland	4	3	3	6
Tampa	4	5	4	4

Selected Characteristics

Education expenditures, the student poverty rate (free meals), the share of non-English speaking students, and the student-teacher ratios are indicators of disadvantaged students and of level of community support of public education. The New Orleans MSA ranks 10th in the share of the population with students enrolled in public and private schools in 2000.

Strong Financial Support. The area ranked 3rd in expenditure per pupil in 1998. This indicates a strong effort to financially support education. A relatively high education budget equates to the public's willingness to support education. However, a reason the expenditures are high is that, based on other metropolitan area data, you would expect more students to be enrolled resulting in lower per capita expenditures.

A potential source of funding dedicated to education is Louisiana's Education Excellence Fund using money from the tobacco settlement. Approximately $77 per student may become available for one time payment if settlement litigation is completed, according to the Louisiana Department of Education.

High Education Needs Population. The area ranks 6th in the proportion of non-English speaking students and 3rd in the percentage of the total population who are students living in poverty. These indicators suggest a substantial effort is required to bring large numbers of students up to standards necessary to have a good learning environment, graduate, and attend college without taking developmental courses. The student-teacher ratio in the New Orleans Area is ranked 3rd best exceeded only by Birmingham and Mobile. As the ratio declines, teachers can pay more attention to each student's special needs. New Orleans Area school systems are making excellent financial and teacher assignment efforts to teach students, including those with economic problems to overcome. Selected metropolitan area education characteristics are provided in Table 20.

TABLE 20. EDUCATION CHARACTERISTICS, COMPETITIVE METROPOLITAN AREAS

Metropolitan Area	2000 Students/ Capita	2000 Student/ Teacher	1998 Exp. Per Student	2000 Non-English Speaking		2000 Poverty Rate
				Number	Percent	
Baltimore	16.9	16.9	$6,853	3,634	0.9%	29%
Birmingham	17.8	15.6	$4,999	1,697	1.1%	16%
Houston	22.1	16.6	NA	139,518	16.9%	20%[b]
Jackson	18.9	16.4	$4,871	216	0.3%	21%
Jacksonville	20.4	18.7	$4,985	2,375	1.3%	13%
Memphis	20.4	17.5[a]	$5,349	198	0.1%	21%[b]
Miami	11.6	19.6	$5,952	66,719	18.1%	20%
Mobile	18.4	15.6	$4,538	1,429	1.6%	27%
New Orleans	**16.0**	**15.8**	**$5,435**	**4,963**	**2.3%**	**23%**
Portland, OR	20.4	20.6	NA	17,558	5.7%	15%
Tampa	16.7	16.9	$5,380	21,328	6.2%	20%

Notes: NA means data not available.
[a] Memphis data based on Crittenden County, Arkansas and DeSoto County, Mississippi.
[b] 1997 data.
Exp. means expenditures.
Dollar data in 1998 dollars.
Higher student-teacher ratio, percent of non-English speaking students, and poverty rates generally indicate an expectation of lower levels of education achievement. A high expenditure per pupil generally indicates more and better education materials and equipment and better prepared students.

Sources: National Center for Education Statistics, U.S. Department of Education and the Bureau of the Census, U.S. Department of Commerce.

				Rankings		
Baltimore	8	5	1	6	9	1
Birmingham	7	10	6	8	8	9
Houston	1	7	-	1	2	6
Jackson	5	8	8	10	7	4
Jacksonville	2	4	7	7	10	11
Memphis	2	3	5	11	11	4
Miami	11	2	2	2	1	6
Mobile	6	10	9	9	5	2
New Orleans	**10**	**9**	**3**	**5**	**6**	**3**
Portland, OR	2	1	-	4	4	10
Tampa	9	5	4	3	3	6

Revenue generated for Jefferson Parish public and private schools in the 2002-2003 school year was $285.6 million from state and local sources. Of this amount, $148.9 million, or 52 percent, was from local sources and $136.7 million from the state. An unusually high share of the 16,200 high school students in Jefferson Parish – 22 percent – attend Catholic schools. In addition to the state and local funding, Catholic school tuition ranges from $4,275 to $4,925 at the five high schools located in the Parish.

PARISH COMPARATIVE ANALYSIS

Within the Metropolitan New Orleans Area, Jefferson Parish public schools are compared to those located in seven other parishes comprising the Area. They are compared with respect to dropout rates, free lunch recipients, standardized test scores, developmental course participation, and years of school completed. The parishes are ranked in relationship to each other.

Dropout Rate

During the 1999-2000 school year in the eight-parish Metropolitan New Orleans Area, Jefferson Parish had the highest dropout rate, as reported by the Louisiana Department of Education. In the 1998-1999 school year both Orleans and St. Tammany Parishes had higher rates. While Jefferson's dropout rate remained the same over the two academic years, those of three Parishes declined, as shown in Table 21.

TABLE 21. HIGH SCHOOL DROPOUT RATES, METROPOLITAN NEW ORLEANS AREA, 1998-2000

	1999-2000		1998-1999	
Parish	**Percent**	**Number**	**Percent**	**Number**
Jefferson	**11.0%**	**1,924**	**11.0%**	**1,629**
Orleans	9.0%	2,109	12.5%	2,993
Plaquemines	2.8%	43	5.0%	77
St. Bernard	8.0%	216	7.5%	210
St. Charles	7.4%	232	5.9%	186
St. James	9.0%	114	8.0%	103
St. John	7.7%	149	11.1%	225
St. Tammany	7.8%	802	6.4%	646

Note: Higher rankings of percents indicate a less well prepared workforce.

Source: District Composite Reports from the Louisiana Department of Education.

			Rankings	
Jefferson	**1**	**2**	**3**	**2**
Orleans	2	1	1	1
Plaquemines	8	8	8	8
St. Bernard	4	5	5	5
St. Charles	7	4	7	6
St. James	2	7	4	7
St. John	6	6	2	4
St. Tammany	5	3	6	3

Free Lunch Program

Participation in the federally-sponsored free lunch program is a surrogate for students not having resources for supplies and support at home for educational preparation and achievement. In Louisiana, 58 percent of public elementary, middle, and high school students participated in this program in the 1999-2000 school year. In Jefferson Parish two out of three students participated; the third highest rate among the eight metropolitan area parishes. These students are typically ill prepared for their formal education, a problem that generally carries through their entire school career. The shares of students participating in this program are provided in Table 22.

TABLE 22. FEDERAL FREE LUNCH PROGRAM, METROPOLITAN NEW ORLEANS AREA, 1999-2000

Parish	Share
Jefferson	**67.0%**
Orleans	74.6%
Plaquemines	53.3%
St. Bernard	51.8%
St. Charles	42.0%
St. James	71.6%
St. John	77.4%
St. Tammany	27.6%

Note: Higher percents indicate the possibility of lower levels of education achievement.

Source: Louisiana Department of Education.

STANDARDIZED TEST SCORES

ACT composite scores show that Jefferson Parish consistently ranked below St. Tammany, St. Charles, and St. Bernard Parishes. This indicates Jefferson students are less prepared than students who graduate from schools in those parishes. All of the parishes' scores generally remained constant, as shown in Table 23. Public school representatives who attended focus groups reported that some information technology students know more about the subject than their teachers who have trouble keeping up with the field. They felt better prepared teachers would result in better prepared students.

TABLE 23. STANDARDIZED TEST AVERAGE COMPOSITE SCORES, METROPOLITAN NEW ORLEANS AREA, 1998-2001

Parish	2000-2001	1999-2000	1998-1999
Jefferson	**18.9**	**18.6**	**18.8**
Orleans	17.2	17.3	17.5
Plaquemines	18.8	19.2	18.1
St. Bernard	19.5	19.6	19.3
St. Charles	20.2	20.0	20.1
St. James	18.0	18.1	17.6
St. John	17.0	17.3	17.2
St. Tammany	21.1	21.3	21.1

Note: Higher scores and rankings indicate more high school students are better prepared for college and the workforce.

Source: District Composite Reports from the Louisiana Department of Education.

		Rankings	
Jefferson	**4**	**5**	**4**
Orleans	7	7	7
Plaquemines	5	4	5
St. Bernard	3	3	3
St. Charles	2	2	2
St. James	6	6	6
St. John	8	7	8
St. Tammany	1	1	1

In support of increasing test scores the Jefferson Parish school system has established 25 National Academy Foundation school-to-career academies in nine of its high schools. So far, certification has been received for the information technology academy only at Grace King High School. The finance or business administration academy has been established at seven high schools and medical academy at four high schools.

Developmental Course Enrollment

Developmental courses are designed for under-prepared students who have not done well in high school level work. Students complete these courses prior to beginning college level work. Courses are available in English, mathematics and reading. Jefferson Parish consistently has a high percentage of its high school graduates who are enrolled in developmental courses during

their first year in public and private colleges and universities in Louisiana. This measure shows that some 57 percent of the Parish's high school graduates who become college freshmen at institutions located in Louisiana are not academically prepared for college level work. Therefore, they take one or more of these remedial courses to try to catch-up. Only Orleans Parish percentages are higher than Jefferson Parish's over the three-year period. St. Tammany has the lowest rates among first-year college students for the three types of developmental courses. The proportion of students from each of the eight Parishes enrolled in these courses has not changed dramatically during the three-year period, as indicated in Table 24.

TABLE 24. DEVELOPMENTAL COURSE ENROLLMENT OF COLLEGE FRESHMEN, METROPOLITAN NEW ORLEANS AREA STUDENTS, 1998-2001

	2000-2001		1999-2000		1998-1999	
Parish	*Freshmen*	**Percent Enrolled**	**Freshmen**	**Percent Enrolled**	**Freshmen**	**Percent Enrolled**
Jefferson	**901**	**57.0%**	**913**	**57.7%**	**919**	**57.6%**
Orleans	1,288	58.0%	1,280	64.4%	1,287	63.8%
Plaquemines	134	45.0%	101	56.4%	112	50.0%
St. Bernard	246	44.0%	228	50.9%	257	49.8%
St. Charles	309	37.0%	292	29.8%	242	36.8%
St. James	115	42.0%	106	44.3%	116	61.2%
St. John	101	54.0%	97	59.8%	106	57.5%
St. Tammany	948	27.0%	808	26.9%	787	26.4%

Note: The higher the percents the less well prepared for college are students.

Source: District Composite Reports from the Louisiana Department of Education.

			Rankings			
Jefferson	**3**	**2**	**2**	**3**	**2**	**3**
Orleans	1	1	1	1	1	1
Plaquemines	6	4	7	4	7	5
St. Bernard	5	5	5	5	4	6
St. Charles	4	7	4	7	5	7
St. James	7	6	6	6	6	2
St. John	8	3	8	2	8	4
St. Tammany	2	8	3	8	3	8

Focus group attendees perceive that the high schools are concentrating their energies on advanced students at the expense of others. However, area school systems are doing a good job

on the General Education Development Program for people who obtain their high school degree after their normal graduation date and on adult literacy, according to the focus groups.

Years of School Completed

Jefferson Parish is ranked 3rd in the Area in percentage of the adult population having post-secondary education. Its labor force is better educated than those of most of the Area's parishes except for Orleans where most of the region's four-year colleges and universities are located. Therefore, Orleans is home to many of their highly educated professors and administrators. Jefferson Parish's high ranking reflects its being a desirable place for more highly educated people to live. The shares of adults by five education levels are provided in Table 25 by parish.

TABLE 25. EDUCATIONAL ATTAINMENT BY PARISH, 2000

Parish	Less Than High School	High School	Some College	College Degree	Graduate Degree
Jefferson	**16.4%**	**35.9%**	**24.5%**	**16.6%**	**6.7%**
Orleans	22.6%	27.6%	22.2%	17.4%	10.2%
Plaquemines	29.4%	39.5%	19.9%	8.6%	2.7%
St. Bernard	22.5%	46.3%	21.4%	7.4%	2.4%
St. Charles	18.2%	40.5%	22.7%	15.0%	3.7%
St. James	27.1%	47.0%	14.8%	7.8%	3.3%
St. John	19.5%	44.3%	21.3%	11.2%	3.7%
St. Tammany	15.2%	31.8%	24.5%	20.4%	8.2%

Notes: Population age 25-years-old and over.
Higher rankings in the categories representing more education indicate a more highly qualified workforce.

Source: Easy Analytic Software, Inc.

			Rankings		
Jefferson	**7**	**6**	**1**	**3**	**3**
Orleans	3	8	4	2	1
Plaquemines	1	5	7	6	7
St. Bernard	4	2	5	8	8
St. Charles	6	4	3	4	4
St. James	2	1	8	7	6
St. John	5	3	6	5	4
St. Tammany	8	7	1	1	2

SUGGESTED CHANGES TO IMPROVE THE WORKFORCE

Focus group attendees were asked for suggested changes to overcome student dropout, low test scores, high remedial course enrollment, and lack of high school graduation issues. Responses included.

- **Advisory Councils to Input to Courses and Content.** Organize advisory councils composed of representatives of local businesses to help prescribe course content and provide mentoring services to high school students.

- **Internships: Career Interest and Education.** Employers should recruit more high school students for internships and summer employment in order to influence their training choices and provide incentives for them to stay in the area and find jobs.

- **Emphasis on Employability Skills.** High schools need to improve training of employability skills: communication, mathematics, reading, and showing up for work in a timely fashion ready to be productive.

- **Alternative Training Achievement Levels.** Community and technical colleges need to offer alternative course tracks for students of differing basic capacities.

- **Tech Opportunity Internet.** In spite of community and technical colleges having Employer Advisory Councils, students and their counselors are sometimes unaware of career opportunities. Periodic Internet "reports" from employers to a central website on immediate and longer-term job opportunities could be accessed by counselors and individual students.

CONCLUSIONS

Metro Area Rank Needs to Improve. The metropolitan New Orleans Area schools do not compare favorably, on most of the indexes evaluated for educational attainment, with the 10 competing metropolitan areas. Relative to them, New Orleans ranks high on dropout rate, low on test scores, high on share of the population not having graduated from high school, and high on students living in poverty. At the same time, New Orleans public schools have a favorable student-teacher ratio and relatively high expenditures per student when compared to competing areas.

Workforce is a particularly important factor in technology company location decisions and improvement is badly needed.

Parish Education Image Needs to Improve. When Jefferson Parish schools are compared to those of the other parishes in the metropolitan area a similar picture emerges. The dropout rate, participation in the free lunch program, and need for remedial courses are categories in which the Parish ranks high. Much more favorable indicators are average test scores and the shares of residents that have graduated from or attended college.

The average quality of the workforce that Jefferson Parish schools prepares is not adequate for the demands of most technology jobs located in the Parish. Strategic initiatives are required to reverse this trend in order to provide a larger pool of qualified technology job applicants.

WORKING PAPER VIII. INVENTORY OF TECHNOLOGY-FOCUSED TRAINING PROGRAMS

WORKING PAPER VIII. INVENTORY OF TECHNOLOGY-FOCUSED TRAINING PROGRAMS (TASK SEVEN)

This working paper describes secondary school technology workforce preparedness requirements of states in which the 11 comparative metropolitan areas are located and post secondary education opportunities. Jefferson Parish school system technology-focused training program trends and parochial high school roles are described. The member of each of five types of certificates and degrees awarded in 2000 are provided for the 11 metropolitan areas. Federally funded research at the seven New Orleans area higher education research institutions is summarized. The implications of these findings for the technology strategy are described.

IMPLICATIONS FOR TECHNOLOGY-LED STRATEGY

Key implications to the strategy of the area's technology-focused training programs are:

- **Similar State Standards Guide Competitive Metros.** States mandate high school graduation requirements. In Louisiana the public and Catholic schools are subject to the same standards. Among the 11 competitive metropolitan areas, science and mathematics graduation requirements – important foundations for technology education – are similar to each other.

- **Need to Encourage Technology Careers in High School Education Plans.** Education plans required of students provide an opportunity for technology career counseling. This planning process should include description of technology company workforce needs in order to influence more students to take courses preparing them for technology careers.

- **Need More Technology Programs and Courses.** Few Jefferson Parish high schools offer technology majors; such as those offered by many other communities. As greater counseling efforts are made to attract students to technology careers, more schools should offer more majors. This will permit utilization of existing physical plants for technology academies accessible throughout the Parish or development of a new technology high school academy.

- **More Technology Courses Needed in High School/Community College Credit Programs.** Existing opportunities to obtain community college credit for high school courses support technology career guidance and post secondary training. This

program should be expanded beyond its current 34 courses to include additional technology courses.

- **Image vs. Total Impact.** The creation and operation of a technology excellence high school would be important for economic development marketing but the parish technology workforce would benefit more from adding faculty and courses at existing high schools.

- **Full Range of Programs Available at Higher Education Institutions.** Metropolitan New Orleans Area colleges and universities provide a broad array of technology courses and degrees comparable to those provided at institutions located in the competitive metropolitan areas. New Orleans Area institutions offer strong science and engineering programs, have substantial research budgets helping to support students, and produce competent graduates from the certificate through the PhD level.

- **Steady Flow of Technology Graduates.** Metropolitan New Orleans Area colleges and universities graduate a steady flow of prospective technology workers each year. They are prime candidates to remain in the Area for job opportunities and prime targets of technology company recruiters.

- **Strong Research Programs.** Metro New Orleans ranked 3rd among the 11 comparable metro areas. The Area's seven research universities attract federal funding ($174.1 million in 2000) which supports student research and education programs and provides opportunities for faculty entrepreneurship and for the testing, application, and commercialization of research results with technology companies.

- **Need to Increase Student Intern Opportunities.** The complexity and changing technical requirements of technology company jobs call for expansion of high school and college student intern opportunities so that they can become familiar with those requirements at an earlier age.

- **Better Prepared Technology Teachers Required.** The quality of training would improve if teachers were better able to keep up with their field of technology specialization. Teachers require more time for mid-career technical training to maintain proficiency.

- **Need Additional Curriculum Advisory Committees.** The commitment to public education in Jefferson Parish by private businesses requires more curriculum advisory committee participation and donations of up-to-date equipment for teaching purposes.

- **Need Workforce Preparedness Initiatives.** From the perspective of a technology employer, more equal emphasis should be placed on workforce preparedness initiatives and on state competency test scores. This could improve the quality of the entry level workforce.

IMPORTANT INFORMATION SOURCES

Three recent analyses (Workforce Needs Assessment, February 1, 2001; Industrial Concentration and Specialization Scan for the Metrovision Regional Economy, The Foundation for a Cluster-Based Strategy, February 2002; and Workforce Needs Assessment II, High Growth Companies, November 2001) were reviewed prior to beginning this assessment. Curricula requirements for the public high schools were obtained from state departments of education. Additional data was obtained from National Center for Educational Statistics Common Core of Data (CCD) and the Integrated Post secondary Education Data System (IPEDS).

Data and opinions from focus group participants listed in the Appendix and interviews with public high school, private high school, community college, four-year college and university, and for-profit private sector representatives were used to provide hands-on experiences and to help analyze trends. Telephone interviews were conducted with additional high school personnel, university administrators, and key business leaders. Educational program and curriculum clusters include those identified in the Industrial Concentration and Specialization Scan for the Metrovision Regional Economy, prepared by DADCO Consulting Services, and information furnished by JEDCO to which the information technology cluster was added. Information on degree programs currently offered, provided in the Appendix, was obtained from the various higher education institutions' websites.

SECONDARY SCHOOL WORKFORCE PREPAREDNESS IN COMPETITIVE COMMUNITIES

Each state sets the core curriculum required of their secondary (high) schools. With the recent emphasis on accountability, states have established performance measures that must be met or exceeded by each school district and each school within their administrative units. Secondary school technology workforce preparedness initiatives in the comparative metropolitan areas are described below for the seven states in which 11 metropolitan areas are located.

Baltimore

Maryland's Career and Technology Education Program requires that each public school student master the basic skills and knowledge necessary for:

- Managing the dual roles of family member and wage earner; and
- Gaining entry-level employment in a high-skill, high-wage job or continuing the student's education at the post secondary level.

The state plan for career and technology education calls for:

- The Department of Education to prepare and biennially update a state plan for career and technology education that sets forth objectives for the next biennium and five-year goals.
- Procedures designed to ensure that all secondary and post secondary students have the opportunity to participate in career and technology education programs; that the state complies with requirements for supplemental federal career and technology education funding; and career and technology education is established as a part of the total education system of the state.

At the elementary level, students are involved in career awareness activities. At the middle school level, students will begin to understand possible career choices by participating in broad-based career exploration such as job shadowing and mentoring. At the high school level, students prepare a career plan linked to post secondary education or other training. Maryland's Career Connections system prepares students for entry into high-skill, high-wage careers; further education; and lifelong learning.

Local Guidance Teams. Local teams composed of employers, parents, teachers, and other community leaders create opportunities for students to pursue activities in both school and work settings in order to blend academic and work-related life skills and attitudes. Classroom and workplace instruction are organized around the nine career clusters: Consumer Service Hospitality and Tourism, Business Management and Finance, Manufacturing Engineering Technology, Environmental and Natural Resources, Health and Biosciences, Arts Media and

Communication, Transportation, Human Resource Services, Construction and Development. Graduation requires a minimum of 20 credits.

Houston

Technology Systems Options. High school students may take a course in technology systems or engineering principles. They graduate from these courses with knowledge of technology systems models, their application to solving problems, factors that affect use of technology products and services, roles of technology in business, and how to assess technology applications. Students are expected to design or improve a technology product or system.

Among other topics for which students are responsible are: quality control, regulations, safety, use of tools, risks and benefits or problem solutions, applications of strategies, budgets, and marketing plans.

Under the state plan for career and technology education, each secondary and post secondary student must be given the opportunity to participate in career and technology education programs. Texas has identified career and technology programs (agriculture science and technology, business, career orientation, health science technology, home economics, technology/industrial technology, marketing, and trade and industrial) about which students are counseled. Graduation requires a minimum of 22 credits.

Tampa, Miami, and Jacksonville

The Florida Department of Education has prescribed a technology systems program composed of eight courses:

Communication
Power and Transportation
Production
Drafting/Illustrative Design
Electronics
Engineering
Applied Technology
Home Technology

Laboratory Components. In addition to classroom work, these courses provide a laboratory setting using hands-on experiences with the tools and materials appropriate to the course content. Career and technical student organizations provide leadership training experiences in each of these eight curricula. Each technology student helps prepare and follows an individual educational plan. This plan provides guidance to the student during school and in finding and applying for job opportunities. Graduation from three technology programs requires successful completion of either a minimum of 24 academic credits in grades 9 through 12 or an International Baccalaureate curriculum.

Memphis

Strong Tech Prep Program. The Tennessee Department of Education core curriculum standards encourage two career paths: 1) university or, 2) technical. Students may change from one path to the other or complete both paths. Students in the technical preparation curriculum path complete a four-unit program of study focusing on a technical subject of their choosing. Part of the program may be completed through work-based learning, in cooperation with employers.

Students electing the university preparatory curriculum complete the core curriculum and courses acceptable for entrance into Tennessee's public colleges and universities. Students electing a technical preparation curriculum complete the core curriculum and a four-unit program of study focusing on a particular technical skill. Schools have flexibility in designing programs of study in that technology students may move directly into the post secondary component of a tech-prep program if they follow their individual plan of study.

The tech-prep program requires two years of high school applied academic and technology courses linked to two years of college courses leading to an associate degree or technical certificate. Students may complete part of their program through work-based learning. During the junior or senior years, a student may spend part of the day working on-site at a business or

government agency with a mentor providing instruction and closely observing the student's performance.

Work Site Component in Tech Ed. Technology students in both the university and technical paths of study have access to work-based learning experiences that allows them to apply classroom theories to practical problems and to explore career options at the work site. Work-based learning experiences may include, but are not limited to, a public service, studios, laboratories, school-based enterprises, internships including clinical experiences, cooperative education, youth apprenticeship, and registered apprenticeship. Graduation requires a minimum of 20 credits.

Birmingham and Mobile

The goal of Alabama's career/technical education curriculum is to provide students rigorous school- and work-based learning planned collaboratively by students, parents, educators, and prospective employers. This approach is intended to produce graduates having industry-recognized credentials and preparation for advanced study or employment. This course of study is designed to provide content that includes academic and career/technical education courses directed to students' interests and skills required to obtain gainful employment upon graduation.

Alabama requires technology course classrooms be supplied with current and emerging equipment and other supplies and materials representative of the content or subject area. Students and teachers have access to laboratory environments on- and off-campus that provide students with practical and real-world experiences in the industries for which their training is preparing them. Equipment must be available, maintained, and upgraded according to a regularly scheduled plan. Textbooks, reference materials, and software, are readily available for student use to support instruction. Students have access to classroom libraries, reading and research areas, and material centers.

Solutions Oriented Curriculum. The technology curriculum emphasizes achieving solutions to a given problem by relying upon a foundation in communication skills (reading, writing, speaking, listening, viewing, and presenting), mathematics, science, and social studies as well as knowledge of current and emerging technologies. For each student, an education plan is prepared jointly with a technology program instructor. Courses and equipment may be tailored to ensure equal access to the full range of learning experiences and skill development opportunities.

Maintaining relationships with representatives of local businesses requires them to participate in the prescription of technology education programs. Representatives from local businesses assist program administrators to monitor and redefine technology programs to address the ever-changing needs of the economy. From this interaction, each program's structure is reviewed to ensure that these needs are being met through lesson plans, instructional techniques, facilities, teacher professional development, technical updates, and changes in equipment.

Local Business Advisory Council. Each technology program utilizes an advisory council, composed of local business, education, and government representatives, as a source of professional input regarding equipment needs, curriculum emphasis, technical updates, and mentoring. These resources include providing judges for student career development events, guest speakers, program sponsors, equipment donations, financial support, scholarships, and hosting on-site field trips. Graduation requires a minimum of 24 credits.

Jackson

Mississippi's school-to-work opportunities program has five purposes—academic mastery, career planning and development, integrated academic and technical information, articulation among key constituencies, and effective local partnership models. Among the 12 components of each local public school system's program is employer involvement in the development and implementation of technology education courses. State technology education guidance to local school boards begins with career discovery initiatives as early as the seventh grade. They are

followed by basic skill (reading, writing, mathematics, problem solving) programs in the 9th and 10th grades. Next, are the higher skill and cooperative education programs provided in the 11th and 12th grades.

Formal Work-based Program. Mississippi's high school graduation requirements of 20 credits include technical and business-specific programs tailored to meet the needs of businesses. In addition, there is a work-based program under which students have a written agreement with their school and employer to achieve occupational skills. Each graduating student is required to pass predetermined courses consistent with this agreement.

Portland

The State of Oregon has defined career-learning frameworks to help students gain a better understanding and deeper knowledge of their technology interests and expectations. These six frameworks connect teaching and learning to an individual's career expectations. Elementary and middle school students are exposed to careers through field trips and in-school presentations by business representatives. In early high school, they spend time in workplaces observing adults on-the-job. As juniors or seniors, technology students are encouraged to hold at least one internship or part-time job in their area of interest.

Three Level Emphasis. This school-to-work program has three core elements:

1. **School-based Learning.** Classroom instruction based on academic- and business-defined occupational skill standards.

2. **Work-based Learning.** Career exploration, work experience, structured training, and mentoring at job sites.

3. **Connecting Activities.** Courses integrating classroom and on-the-job instruction, matching students with participating employers, and training by mentors.

Technology students take a broad array of required courses which may be increased by the student's education plan. Each student must demonstrate knowledge in personal management,

problem solving, communication, teamwork, employment foundations, and career development. Graduation requires a minimum of 22 credits

New Orleans

Career Awareness Activities. Louisiana requires high school students to have the opportunity to participate in at least six career awareness activities each year during middle school and that they prepare a five-year education plan. School systems located in New Orleans Area have in-place three workforce preparedness programs: school-to-career, work-based learning, and school-based learning.

Governor's Council. The Governor's Council on School-to-Work program's guiding principles include: 1) prepare all students for productive citizenship and work; 2) identify what students need to know and be able to do in a changing workplace; 3) link learning with work; 4) engage students and parents in career planning based on four occupational clusters (business/marketing, engineering/industry/ technology, health/human services, humanities/the arts); and 5) recruit employers for work-based learning internships, and mentoring.

Louisiana's high school education standards apply to both public and parochial systems. Graduation requires a minimum of 23 credits. A discussion of Jefferson Parish schools begins on page 123.

Summary of Requirements

As evidenced by the various state curriculum requirements, the New Orleans Area graduation requirements and technology curricula are comparable to the other MSAs studied. All of the areas specify a technology component for students and provide guidelines to ensure that technology competency is part of the curricula from elementary school through high school graduation. The basic structure of technology training programs is designed to provide a

foundation of knowledge and experiences that are technologically based. These experiences and the knowledge gained are transferable to work and/or post secondary learning environments.

Similar Tech Emphasis Among Competitive Cities. All of the competitive metropolitan areas have minimum high school graduation requirements and career clusters to supply graduates to technology career paths. While the number varies and the names are not identical, the courses, majors, and school-to-work opportunities are basically the same. All of the competitive metropolitan area school systems respond to state standards and to programs designed at the federal government level and administered by state departments of education. As a result there is a great deal of similarity among the graduation requirements. They are summarized in Table 26 in terms of the number of credits by subject.

TABLE 26. TECHNOLOGY SPACE IN MINIMUM HIGH SCHOOL GRADUATION REQUIREMENTS BY STATE, 2002

Subject	Alabama	Florida	Louisiana	Maryland	Mississippi	Oregon	Tennessee	Texas
English	4	4	4	4	4	3	4	4
Mathematics	4	3	3	3	3	2	3	3
Science	4	3	3	3	3	2	3	2
Social Studies	4	3	3	3	3	3	3	-
Health/Physical Education	1.5	1.5	2	1	0.5	2	1	-
Language and Fine Arts	0.5	1	-	3	1	4	-	-
Subtotal	**18**	**15.5**	**15**	**17**	**14.5**	**16**	**14**	**9**
Business and Technology	0.5	-	-	1	1	-	-	-
Electives	5.5	8.5	8	2	4.5	6	6	13
Technology Potential Subtotal	**6**	**8.5**	**8**	**3**	**5.5**	**6**	**6**	**13**
Total Units or Credits	**24**	**24**	**23**	**20**	**20**	**22**	**20**	**22**

Note: Technology potential subtotal represents curriculum space to add tech courses.

Sources: State Departments of Education.

The states require of their school districts from 20 to 24 credits to graduate from high school. The primary variable is the number of elective credits which vary from two in Maryland to 13 in Texas. By requiring student education plans, guidance is provided by the schools on the choice of electives in support of the students' plan. Another variation among the states is the extent to which language, fine arts, business, and technology courses are required. While such courses are not mandatory in Louisiana, Tennessee, and Texas, they are emphasized in Oregon and Maryland.

Relatively uniform emphasis is placed on science and mathematics, two fundamental subjects for technology workforce training, among the eight states. The uniform emphasis prevails for English, basic training for workplace communication. These and other minimum requirements provide education opportunities but do not measure the quality of courses or of graduated students.

JEFFERSON PARISH

Jefferson Parish is served by 10 public, five Catholic, and nine other private high schools. About 68 percent of the students are trained in the public schools, 22 percent in the Catholic schools, and 10 percent in other private high schools.

Public School System

Jefferson Parish's School-to-Career program has 10 Career Academies comprising 32 majors in its public high schools. The National Academy Foundation certifies these academies which are groupings of courses within 16 clusters or topics which students study.

Greater emphasis is being placed by the schools on meeting the Louisiana Educational Assessment Program (LEAP) measures and on the Graduate Exit Exam (GEE) scores with the result that funding in Jefferson Parish for the School-to-Career program has diminished this school year by over 45 percent. Grants have been sought to continue these programs.

Workforce preparedness is not as high a priority for the Jefferson Parish School Board and its administration at this time as was formerly the case.

Information Technology Academy Curriculum. The Jefferson Parish Schools' information technology academy curriculum provides classroom and internship experiences for hands-on training for computer technology students. By expanding this program and creating additional majors and an academy in the scientific research, engineering, and technology cluster, the training program for high technology secondary programs can be greatly enhanced. The academies in Jefferson Parish operate without the added cost of providing additional buildings, transportation, and administrative staff necessary to create a separate location. As mandated in Louisiana for all entering high school freshmen since 2001, Jefferson Parish must provide for technology training. Monies that are available for use in technology programs can best be used to enhance the existing programs within the existing schools.

Job Shadowing. During the 2000-2001 school year 1,249 students and 120 businesses participated in job shadowing, a voluntary program that can encourage students to take technology training. This program places students in local businesses for various periods of time during which they participate in the employee's activities in order to learn about his or her job.

Community College Proficiency. Jefferson Parish schools have 34 classes for which a proficiency-testing agreement is in-place with Delgado Community College which permits students to receive college credit for those high school courses. Delgado will honor the hours earned for up to five years and give those credits to students once a student has completed 21 hours of college credit at Delgado. Concurrent enrollment at Delgado and in a Jefferson Parish High School is also available to students once they have earned 11 high school credits and are at least in the eleventh grade.

Need For Broader Technology Majors. In Jefferson Parish, entering freshmen declare a major in a career cluster, three of which are technology-oriented: information technology; health science; and scientific research, engineering, and technology. These three clusters provide

opportunities for entering the technology workforce and/or entering post secondary high technology programs. However, there are few technology-oriented clusters available. Only one technology major is at each of three Jefferson Parish public high schools: computer electronics at Cullier, the information technology academy at Grace King, and the scientific research, engineering, and technology cluster at John Ehret. Students attending other Jefferson Parish public high schools do not have these technology education opportunities. The majors and academies at each of these schools are provided in Appendix Table 1.

Catholic School System

A long-time Louisiana tradition is Catholic Church-sponsored high schools of which there are five located in Jefferson Parish. Because State Department of Education standards apply equally to the public and Catholic high schools, the required credits in both systems are comparable. The Catholic schools are distinguished from the public schools by charging tuition in addition to receipt of public funding and by greater emphasis on college preparation rather than on preparation to enter the workforce following graduation.

The five Catholic high schools – Archbishops Blenk, Chapelle, Rummel, and Shaw and Imaculata – enroll from 430 to 1,330 students each. Total enrollment is approximately 4,100 students. Because students must apply for admission and pay tuition, those whose graduation prospects are not high may not be admitted. According to the focus groups, a result is the average Catholic high school graduate is better prepared than the average public school graduate for job opportunities and college.

Other Parochial Schools

Located in Jefferson Parish are nine other parochial schools of which four have a religious affiliation. All nine schools prepare students for entrance to four-year colleges and universities rather than offering school-to-career program opportunities. Therefore, they are not a short-term source of permanent technology employees.

The four schools having a religious affiliation have 636 high school students and the five private non-denominational schools have 1,150 high school students. An estimated 95 percent of the 425 students who graduated in 2002 from the nine schools went to college.

POST SECONDARY PROGRAMS AND GRADUATES

A continuous flow of post secondary graduates replenishes the workforce. College and university technology programs which attract students to the area increase the pool available to compete for Jefferson Parish jobs. Some teaching faculty members establish technology companies while others are available to work toward commercialization of their research. In these ways the area's college and university programs and courses, graduates, and research are important to growing the Parish's existing technology companies and attracting new ones.

Programs

The following 13 clusters of academic programs were identified for comparison among the 11 metropolitan areas.

- Arts & Entertainment
- Biotechnology
- Oil and Gas
- Construction and Support
- Petrochemical
- Financial Services/Banking
- Environmental Technology
- Information Technology
- Maritime
- Transportation
- Food and Consumer Products
- Telecommunications and e-commerce
- Life Sciences/Health Care

Higher education course and degree descriptions were compared in order to categorize degrees among the 13 program clusters. From the list of degree programs found in the 11 MSAs, it is apparent that most degrees are available within most major metropolitan areas. While degree titles often vary and degrees of the same name may contain different course offerings, educational opportunities for residents are readily available within the various MSAs. New Orleans Area educational institutions offer a comparable number and variety of degree programs

to those offered elsewhere. Selected technology certificates and degrees offered by Metropolitan New Orleans Area institutions are listed in the Appendix.

College and university degrees available from New Orleans Area institutions include technology offerings in all 13 clusters. Especially strong are life sciences health care and information technology courses. This broad availability of degrees is attributable to:

- Typical requirements of disciplines.
- Results of research undertaken at the institution.
- Prescriptions of courses and degrees jointly determined by the institution and by business representatives.

Certificates and Degrees

Certificates and degrees awarded in the 13 clusters are quantified by five types of degrees for each of the 11 metropolitan areas in the Table 27. The Metropolitan New Orleans Area's institutions graduate large numbers of people at all levels of education compared to the other metropolitan areas. This positions Metropolitan New Orleans Area employers to compete for graduates' talents in a broad range of occupations requiring these skills.

TABLE 27. CERTIFICATES AND DEGREES AWARDED, COMPARATIVE METROPOLITAN AREAS, 2000

Metropolitan Area	Certificates	Associate	Bachelors	Masters	Doctoral
Baltimore	-	574	1,665	1,179	91
Birmingham	41	412	868	671	87
Houston	542	969	3,696	1,616	120
Jackson	-	1	982	292	6
Jacksonville	24	637	973	206	-
Memphis	-	-	1,410	504	50
Miami	107	2,730	5,848	2,326	185
Mobile	199	514	859	269	42
New Orleans	**43**	**895**	**2,476**	**1,214**	**86**
Portland	7	613	1,457	220	156
Tampa	84	845	599	129	-

Sources: National Center for Educational Statistics Common Core Data and Integrated Post secondary Data System.

University Research

Life sciences and engineering research dominate federal funding among the New Orleans Area's seven research institutions. This funding typically provides research opportunities for students and may result in collaboration with technology firms in the testing, application, and commercialization of the research. Therefore, Jefferson Parish provides a convenient location for private firms to establish and maintain relationships with college and university science and engineering researchers. Research funding by field and institution is provided in Table 28.

TABLE 28. RESEARCH AND DEVELOPMENT FUNDING IN SCIENCES AND ENGINEERING, JEFFERSON PARISH AREA UNIVERSITIES, 2000

Field	A	B	C	D	E	F	G
Engineering	0	0	$12,492	$6,697	0	$563	0
Physical Sciences	$677	$264	4,698	2,784	$83	256	0
Environmental Sciences	0	0	1,387	1,448	0	229	0
Mathematics	0	0	274	730	0	249	0
Computer Sciences	0	0	203	0	0	138	0
Life Sciences	1,919	0	458	70,301	100	289	$55,793
Psychology	0	0	538	308	0	0	0
Social Sciences	0	0	2,970	2,097	0	0	0
Other Sciences	829	0	0	5,370	0	0	0
Total	**$3,425**	**$264**	**$23,020**	**$89,785**	**$183**	**$1,724**	**$55,793**

Notes: University code:
A Xavier University
B Dillard University
C University of New Orleans
D Tulane University
E Southern University
F Loyola College
G Louisiana State University Health Sciences
Data in thousands of dollars.
Higher funding levels indicate more opportunities for commercialization of resulting new products and services and for technology job growth.

Source: National Science Foundation.

The numbers of post secondary institutions in the area and the degrees offered in the training clusters show that the curricula needed to train the high technology workforce required to support technology-led strategies for development are available. Focus group participants representing the education community feel the need to increase curriculum planning capacity among the business community, the public schools, and the post secondary institutions in order to help the education community better serve technology businesses. Cooperation among the education institutions would help improve training and worker preparation and improve the recruitment successes of businesses.

CONCLUSIONS

State requirements of high schools provide substantial guidance to local systems regarding courses offered, standards of learning, and desired outcomes. These requirements and education objectives are similar from state-to-state. Jefferson Parish's 24 public and private high schools differ significantly in terms of their sizes and degree to which college preparation is emphasized.

Compared to other selected metropolitan areas, programs and courses offered by New Orleans' colleges and universities are similar and produce many graduates into the workforce. Sponsored research at seven of the area's colleges and universities emphasize life sciences and engineering. These programs and this research support growth of technology businesses.

APPENDICES

WORKING PAPER I. RECOMMENDED TARGET INDUSTRIES APPENDIX

COMPLETE LISTING OF TECHNOLOGY TARGETS

Approach	SIC	Description
A-1	1731	Telecommunications Contractor
A-1	2834	Mfg Medicinal and Botanical Products
A-1	2841	Manufacture Industrial Cleaners/Detergents
A-4	2851	Paints and Allied Products
A-2	2911	Petroleum Refining
A-4	3511	Turbines and Turbine Generator Sets
A-1	3556	Food Products Machinery
A-4	3571	Electronic Computers
A-1 &A-4	3625	Mfg Control Systems
A-4	3661	Mfg Telephone Equip Systems
A-1	3672	Printed Circuit Boards
A-4	3694	Engine Electrical Equipment
A-4	3695	Magnetic and Optical Recording Media
A-4	3731	Ship Building and Repairing
A-4	3732	Boat Building and Repairing
A-1	3822	Mfg Alarm Systems
A-4	3826	Analytical Instruments
A-1	3829	Mfg Measuring/Controlling Devices
A-4	3841-02	Diagnostic Apparatus
A-4	3841-04	Orthopedic Apparatus
A-4	3841-05	Medical Instruments and Equipment
A-1, A-2, & A-3	4812	Wireless Voice/Data Computer Networking
A-2 & A-3	4813	Wired Telecommunications Carriers
A-2	4899	Other Telecommunications
All	7371	Custom Computer Programming Services
A-1 & A-4	7372	Computer Software
A-1 & A-4	7373	Computer Systems Design & Networking
A-4	7374	Computer Graphics
A-2 & A-3	7379	Other Computer Related Services
A-4	7812	Motion Picture Production and Distribution
A-1 & A-4	8711	Engineering Services IT Consulting
A-2	8731	Physical, Engineering, and Life Sciences Research and Development
A-1	8734	Testing Laboratories

Notes:
- A-1 Existing Parish Technology Company Judgment
- A-2 Regional Technology Growth Sectors
- A-3 Comparable Metro Growth Sectors
- A-4 Technology Institution Linked

WORKING PAPER II. INTERVIEW SURVEY APPENDIX

TECHNOLOGY COMPANY REPRESENTATIVES INTERVIEWED

Mr. Paul Horton
Intralox
Harahan

Mr. Ralph Melian
Antares Technology Solutions
Metairie

Mr. Chris Lopez
Hotel Booking Solutions
Metairie

Mr. Terrence Verigan
US LEC Communications
Metairie

Mr. Rick Farizo
Test Automation and Controls
Harvey

Dr. Sudhir K. Sinha
Reliagene Technologies
Elmwood

Mr. Tommy J. Tastert
Diamond Software
Metairie

Mr. Quinn Jones
Telecomcareers.net
Metairie

Dr. Donald R. Owen
Biosouth Research Laboratories
Biosyn
Harahan

Mr. Tim Moreau
EDG Consulting Engineers
Metairie

Mr. Rehan Kamal
Computrols
Harvey

Mr. Mathew Steckel
Petro Designs
Gretna

Mr. Joey Auer
Diamond Data Systems
Elmwood

Mr. Bob Lozeron and Mr. Mark Brown
Mas Tec
Harahan

Mr. Greg Turner
Rexel
Harahan

Because the interviews were confidential, interviewee comments are not for attribution.

WORKING PAPER III. COMPENSATION/WAGE SURVEY APPENDIX

COMPONENT JURISDICTIONS, SELECTED METROPOLITAN AREAS

Birmingham, AL MSA
- Blount County, AL
- Jefferson County, AL
- St. Clair County, AL
- Shelby County, AL

Jackson, MS MSA
- Hinds County, MS
- Madison County, MS
- Rankin County, MS

Miami, Fl PMSA
- Miami-Dade County, FL

Memphis, TN-AR-MS MSA
- Crittenden County, AR
- DeSoto County, TN
- Fayette County, TN
- Shelby County, TN
- Tipton County, TN

Mobile, AL MSA
- Baldwin County, AL
- Mobile County, AL

Tampa – St. Petersburg – Clearwater, FL MSA
- Hernando County, FL
- Hillsborough County, FL
- Pasco County, FL
- Pinellas County, FL

Jacksonville, FL MSA
- Clay County, FL
- Duval County, FL
- Nassau County, FL
- St. Johns County, FL

Houston, TX PMSA
- Chambers County, TX
- Fort Bend County, TX
- Harris County, TX
- Liberty County, TX
- Montgomery County, TX
- Waller County, TX

New Orleans, LA MSA
- Jefferson Parish, LA
- Orleans Parish, LA
- Plaquemines Parish, LA
- St. Bernard Parish, LA
- St. Charles Parish, LA
- St. James Parish, LA
- St. John the Baptist Parish, LA
- St. Tammany Parish, LA

WORKING PAPER IV. EXISTING TECHNOLOGY INFRASTRUCTURE INVESTMENTS APPENDIX

UNIVERSITIES IN THE NSF DATA SET

Baltimore	Coppin State College
	Johns Hopkins University
	Loyola College
	Morgan State University
	University of Maryland at Baltimore
	University of Maryland Baltimore County
Birmingham	University of Alabama at Birmingham
Houston	Baylor College of Medicine
	Rice University
	Texas Southern University
	University of Houston
	University of Houston-Clear Lake
	University of Houston-Downtown
	University of Texas Health Science Center Houston
	University of Texas MD Anderson Cancer Center
Jackson	Jackson State University
Memphis	Le Moyne-Owen College
	Rhodes College
	Southern College of Optometry
	University of Memphis
	University of Tennessee Health Science Center
Miami	Florida International University
Mobile	University of South Alabama
New Orleans	Dillard University
	Louisiana State University, Health Sciences Center
	Loyola University New Orleans
	Tulane University
	University of New Orleans
	Xavier University of Louisiana
Portland	Lewis and Clark College
	Oregon Health Sciences University
	Portland State University
	Reed College
	University of Portland
Tampa	University of South Florida

WORKING PAPER V. MAIL QUESTIONNAIRE SURVEY APPENDIX

APPENDIX TABLE V-A. QUESTIONNAIRE RESPONSES BY QUESTION, 2002

Question	Useable Responses
1. Reason(s) for choosing Jefferson Parish	67
2. Other locations considered	61
3. Please list problems with current location, if any	55
4. Product(s) or service(s)	71
5. Product(s)/service(s) growing in demand	50
6. Product(s)/services(s) declining in demand	44
7. Supplier locations	52
8. Customer locations	62
9. Transportation services: highway, air, rail	54
10. Are you currently using fiber optics? If not, is fiber optics accessible at your site?	73
11. Other infrastructure needs	28
12. Over the past 24 months, employment has increased/decreased	50
13. Salary/wage range	61
14. Describe any workforce issues	46
15. Describe any workforce training needs	44
16. Have you utilized any local or state incentives? If so which programs?	68
17. Do you need incentives for workforce development, employee expansion, capital expansion, other	45
18. Venture capital sources	37

Note: Question 12 not asked on the first of the two questionnaires that were distributed.

Source: Hammer, Siler, George Associates.

WORKING PAPER VI. STRENGTHS, WEAKNESSES, OPPORTUNITIES, THREATS APPENDIX

SWOT TABLES

The following tables compare the Metropolitan New Orleans Area to 10 other metropolitan areas or compares Metropolitan New Orleans parishes with respect to the following factors:

At-place employment
Employment and average weekly wages by industry
Occupations and annual wage estimates
New Orleans wage rates by occupation as percent of other metropolitan areas
Wages rankings by selected technical occupation
Labor force and unemployment
Population trends
Education characteristics
Educational attainment
High school dropout rates
Free lunch program participation
Standardized test average composite scores
Developmental course enrollment
Educational attainment by parish
Higher education institutions and enrollment
Science and engineering research and development funding
Research and development sciences and engineering
Commuting and traffic congestion
Air cargo
Prospective technology park sites
Cost of living index
Selected tax rates
Taxes and expenditures
Fiber optic lines permitted
Competitive metropolitan area image rankings
Arts and culture indicators
Recreation indicators
Climatic conditions
Crime rates

APPENDIX TABLE A. AT-PLACE EMPLOYMENT, COMPETITIVE METROPOLITAN AREAS, 2002

Metropolitan Area	Mining/ Construction	Manufacturing	TCU[a]	Trade	FIRE[b]	Services	Government	Total
Baltimore	74.1	95.2	60.8	279.2	77.8	451.2	202.0	1,240.3
Birmingham	34.4	47.3	30.0	116.3	39.8	149.8	68.1	485.7
Houston	230.2	210.9	145.7	479.9	116.5	664.1	259.1	2,106.4
Jackson	12.5	19.1	16.7	54.9	14.6	65.0	49.2	232.0
Jacksonville	31.9	38.1	38.0	134.5	58.8	206.6	62.1	570.0
Memphis	25.5	55.6	67.4	147.8	30.2	177.4	78.2	582.1
Miami	36.4	61.1	94.4	261.3	66.6	362.2	143.4	1,025.4
Mobile	17.4	25.5	12.1	60.3	10.7	69.8	34.1	229.9
New Orleans	**41.0**	**43.6**	**39.7**	**156.6**	**31.2**	**204.0**	**104.4**	**620.5**
Portland, OR	53.0	137.9	53.7	230.8	64.1	284.0	118.4	941.9
Tampa	65.8	84.7	53.7	267.3	92.2	516.2	139.0	1,218.9

Notes: Excludes agriculture, forestry, and fishing.
Data in thousands of employees in July 2002.
[a] TCU means transportation communications and utilities.
[b] FIRE means finance, insurance, and real estate.

Source: Bureau of Labor Statistics, U.S. Department of Labor.

	Rankings							
Baltimore	2	3	4	2	3	3	2	2
Birmingham	7	7	9	9	7	9	8	9
Houston	1	1	1	1	1	1	1	1
Jackson	11	11	10	11	10	11	10	10
Jacksonville	8	9	8	8	6	6	9	8
Memphis	9	6	3	7	9	8	7	7
Miami	6	5	2	4	4	4	3	4
Mobile	10	10	11	10	11	10	11	11
New Orleans	**5**	**8**	**7**	**6**	**8**	**7**	**6**	**6**
Portland, OR	4	2	5	5	5	5	5	5
Tampa	3	4	5	3	2	2	4	3

APPENDIX TABLE B. AT-PLACE EMPLOYMENT SHARES BY INDUSTRY, 2002

Metropolitan Area	Mining/ Construction	Manufacturing	TCU[a]	Trade	FIRE[b]	Services	Government	Total
Baltimore	6.0%	7.7%	4.9%	22.5%	6.3%	36.4%	16.3%	100%
Birmingham	7.1%	9.7%	6.2%	23.9%	8.2%	30.8%	14.0%	100%
Houston	10.9%	10.0%	6.9%	22.8%	5.5%	31.5%	12.3%	100%
Jackson	5.4%	8.2%	7.2%	23.7%	6.3%	28.0%	21.2%	100%
Jacksonville	5.6%	6.7%	6.7%	23.6%	10.3%	36.2%	10.9%	100%
Memphis	4.4%	9.6%	11.6%	25.4%	5.2%	30.5%	13.4%	100%
Miami	3.6%	6.0%	9.2%	25.5%	6.5%	35.3%	14.0%	100%
Mobile	7.6%	11.1%	5.3%	26.2%	4.7%	30.4%	14.8%	100%
New Orleans	**6.6%**	**7.0%**	**6.4%**	**25.2%**	**5.0%**	**32.9%**	**16.8%**	**100%**
Portland, OR	5.6%	14.6%	5.7%	24.5%	6.8%	30.2%	12.6%	100%
Tampa	5.4%	6.9%	4.4%	21.9%	7.6%	42.3%	11.4%	100%

Notes: Excludes agriculture, forestry, and fishing.

[a] TCU means transportation communications and utilities.

[b] FIRE means finance, insurance, and real estate.

Source: Bureau of Labor Statistics, U.S. Department of Labor.

APPENDIX TABLE C. EMPLOYMENT AND AVERAGE WEEKLY WAGES BY INDUSTRY, JEFFERSON PARISH AND LOUISIANA, 2000

	Jefferson		Louisiana		Wages in Parish as Share of Louisiana
Industry	**Employment**	**Average Wages**	**Employment**	**Average Wages**	
Agriculture Forestry & Fishing	1,171	$414.09	17,928	$358.47	116%
Mining	2,802	$951.11	48,159	$1,012.75	94%
Construction	14,909	$611.68	136,369	$586.25	104%
Manufacturing	17,886	$647.30	183,372	$774.78	84%
Transportation Communications and Utilities	13,465	$724.98	130,859	$713.72	102%
Wholesale Trade	17,493	$748.93	95,757	$676.05	111%
Retail Trade	50,378	$318.90	357,302	$288.60	111%
Finance Insurance and Real Estate	12,306	$718.32	84,244	$655.09	110%
Services	78,066	$515.70	708,279	$492.93	105%
Public Administration	6,154	$635.22	103,279	$561.59	113%
Total	214,630	$539.48	1,865,548	$536.36	101%

Note: Includes establishments covered by Louisiana employment security law.

Source: Louisiana Department of Labor.

APPENDIX TABLE D. OCCUPATIONS AND ANNUAL WAGE ESTIMATES, 2000

Occupation	Baltimore		Birmingham		Houston		Jackson		Jacksonville		Memphis		Miami		Mobile		New Orleans		Portland, OR		Tampa	
	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage	Employment	Mean Annual Wage
Management																						
Computer and Information Systems Managers	3,440	$80,320	890	$61,880	4,440	$79,630	350	$61,170	1,170	$81,070	960	$69,810	1,860	$74,970	170	$57,540	1,200	$64,920	1,840	$82,340	2,310	$79,500
Engineering Managers	1,870	$82,410	600	$75,330	8,870	$88,260	190	$80,020	590	$80,170	500	$75,590	930	$84,100	260	$78,330	790	$79,490	2,360	$86,770	1,500	$84,020
Computer and Mathematical																						
Computer Programmers	5,250	$54,350	1,810	$48,350	[a]	$76,150	350	$45,350	3,350	$57,820	1,250	$55,830	2,500	$54,750	210	$41,400	1,350	$51,230	2,210	$60,450	5,150	$56,380
Computer Software Engineers, Applications	1,860	$72,800	1,210	$63,190	13,330	$66,230	520	$48,280	1,180	$64,600	730	$59,710	1,280	$56,000	130	$52,840	450	$60,610	3,440	$71,500	4,700	$61,780
Computer Software Engineers, Systems Software	2,760	$71,500	250	$59,120	8,800	$68,660	70	$54,990	820	$70,870	570	$44,350	810	$60,260	NA	NA	[a]	$67,410	2,330	$66,690	2,690	$65,270
Computer Support Specialists	4,130	$40,740	1,500	$34,700	9,720	$48,630	550	$39,780	2,430	$40,370	2,440	$33,760	2,240	$35,950	490	$32,380	1,460	$40,180	9,330	$31,070	3,910	$38,500
Computer Systems Analysts	6,560	$63,480	2,470	$53,700	5,740	$60,190	690	$47,700	2,350	$55,820	1,600	$51,990	2,450	$55,960	170	$53,140	2,090	$50,360	3,370	$58,270	4,060	$60,640
Network and Computer Systems Administrators	2,290	$52,050	560	$47,860	3,980	$52,160	520	$39,040	960	$52,130	680	$53,680	1,480	$50,350	320	$41,290	500	$43,960	2,220	$49,220	1,360	$52,260
Network Systems and Data Communications Analysts	1,550	$59,300	380	$51,870	1,500	$54,800	160	$50,250	1,170	$73,070	440	$49,700	[a]	$55,860	[a]	$42,910	[a]	$56,870	1,470	$54,300	1,140	$60,270
Architecture and Engineering																						
Chemical Engineers	270	$69,410	NA	NA	1,660	$70,110	[a]	$56,830	70	$71,770	130	$65,670	[a]	$56,930	190	$69,800	210	$80,560	[a]	$70,440	70	$60,690
Computer Hardware Engineers	570	$63,920	[a]	$68,340	1,730	$61,320	[a]	$54,150	90	$71,940	220	$39,250	40	$69,860	NA	NA	[a]	$64,600	410	$72,110	350	$66,650
Electrical Engineers	1,330	$71,640	250	$62,800	3,980	$76,550	60	$46,530	140	$58,040	350	$60,570	360	$63,880	150	$62,280	470	$62,530	1,440	$65,440	940	$61,610
Electronics Engineers, Except Computer	1,290	$70,560	[a]	$65,700	1,290	$70,870	NA	NA	260	$56,540	[a]	$56,100	420	$61,610	NA	NA	160	$62,570	910	$58,490	930	$63,970
Industrial Engineers	1,970	$61,610	260	$64,190	3,050	$65,950	50	$43,170	220	$60,140	240	$51,750	550	$59,420	130	$57,320	470	$71,460	2,090	$59,070	960	$60,530
Mechanical Engineers	2,350	$56,750	610	$53,280	11,900	$76,580	70	$49,980	250	$54,070	470	$58,060	470	$50,820	230	$58,480	640	$73,380	1,560	$55,940	910	$58,920
Petroleum Engineers	N/A	N/A	NA	NA	1,960	$85,760	40	$58,850	NA	NA	NA	NA	NA	NA	NA	NA	450	$85,960	NA	NA	NA	NA
Electrical and Electronic Engineering Technicians	640	$46,920	1,070	$38,750	3,380	$38,940	430	$37,400	1,120	$40,780	850	$34,100	2,300	$43,860	340	$37,980	870	$43,830	2,040	$37,320	1,830	$39,690
Surveying and Mapping Technicians	400	$33,290	210	$25,730	1,870	$30,390	40	$32,920	510	$23,410	500	$25,740	200	$29,090	70	$24,670	190	$33,430	700	$34,350	1,640	$26,170
Life, Physical, and Social Science Occupations																						
Chemists	[a]	$54,320	190	$46,330	3,360	$52,190	50	$36,990	340	$43,170	290	$47,770	260	$41,660	[a]	$60,050	300	$55,850	170	$48,400	280	$44,650
Environmental Scientists and Specialists, Including Health	580	$48,130	NA	NA	800	$56,200	160	$37,550	260	$40,860	190	$44,680	170	$46,390	180	$35,460	370	$32,940	280	$45,290	770	$44,330
Agriculture and Food Science Technicians	390	$27,850	NA	NA	NA	NA	NA	NA	[a]	$40,450	40	$31,780	[a]	$20,280	NA	NA	[a]	$18,760	[a]	$32,430	NA	NA
Chemical Technicians	[a]	$38,940	80	$34,490	3,420	$40,660	30	$25,520	190	$32,730	340	$40,090	90	$30,080	270	$35,140	450	$37,040	280	$34,600	230	$36,580
Geological and Petroleum Technicians	NA	NA	NA	NA	[a]	$37,480	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	300	$41,860	NA	NA	NA	NA
Healthcare Practitioners and Technical																						
Medical and Clinical Laboratory Technologists	1,890	$45,020	720	$41,120	2,160	$39,700	480	$37,660	700	$37,360	990	$37,210	1,250	$42,750	250	$40,920	1,060	$37,090	750	$47,370	1,970	$38,790

APPENDIX TABLE D. OCCUPATIONS AND ANNUAL WAGE ESTIMATES, 2000

	Baltimore		Birmingham		Houston		Jackson		Jacksonville		Memphis		Miami		Mobile		New Orleans		Portland, OR		Tampa	
Occupation	**Employment**	**Mean Annual Wage**	**Employment**	**Mean Annual Wage**	**Employment**	**Mean Annual Wage**	**Employment**	**Mean Annual Wage**	**Employment**	**Mean Annual Wage**	**Employment**	**Mean Annual Wage**	**Employment**	**Mean Annual Wage**	**Employment**	**Mean Annual Wage**	**Employment**	**Mean Annual Wage**	**Employment**	**Mean Annual Wage**	**Employment**	**Mean Annual Wage**
Medical and Clinical Laboratory Technicians	1,690	$31,870	870	$27,320	2,810	$28,120	130	$23,270	270	$25,420	1,240	$25,960	830	$31,100	300	$22,800	410	$22,900	1,310	$31,620	2,180	$26,320
Diagnostic Medical Sonographers	340	$46,510	140	$40,620	580	$42,150	50	$56,480	270	$31,640	210	$42,490	490	$45,160	90	$39,640	230	$38,440	130	$52,680	440	$42,620
Radiologic Technologists and Technicians	1,620	$42,880	680	$36,850	2,720	$37,610	280	$31,960	730	$34,480	900	$33,930	1,640	$36,610	340	$32,300	1,170	$32,420	830	$41,620	1,420	$35,860
Licensed Practical and Licensed Vocational Nurses	3,320	$35,740	2,890	$26,010	8,360	$33,090	1,700	$25,030	2,110	$31,980	2,940	$27,920	6,150	$29,500	1,970	$23,900	4,120	$27,810	1,540	$35,170	6,490	$30,360
Medical Records and Health Information Technicians	1,240	$26,590	870	$20,410	2,570	$22,040	400	$20,910	880	$21,560	650	$21,450	1,290	$27,410	320	$19,890	1,030	$23,820	1,220	$26,280	2,190	$23,380
Office and Administrative Support																						
Data Entry Keyers	4,760	$22,020	1,290	$21,400	5,890	$21,570	850	$20,100	1,950	$20,930	1,800	$20,060	3,870	$22,390	550	$19,660	1,400	$19,550	3,200	$23,070	9,340	$20,000

Notes: [a] Estimates not released due to high relative standard error.
NA means data not available.
Mean means the wages between the smallest and largest amounts.

Source: Bureau of Labor Statistics, U.S. Department of Labor.

APPENDIX TABLE E. NEW ORLEANS WAGE RATES BY OCCUPATION AS PERCENT OF OTHER METROPOLITAN AREAS, 2000

Occupation	Baltimore	Birmingham	Houston	Jackson	Jacksonville	Memphis	Miami	Mobile	New Orleans	Portland	Tampa
Management											
Computer and Information Systems Managers	81%	105%	82%	106%	80%	93%	87%	113%	100%	79%	82%
Engineering Managers	96%	106%	90%	99%	99%	105%	95%	101%	100%	92%	95%
Computer and Mathematical											
Computer Programmers	94%	106%	67%	113%	89%	92%	94%	124%	100%	85%	91%
Computer Software Engineers, Applications	83%	96%	92%	126%	94%	102%	108%	115%	100%	85%	98%
Computer Software Engineers, Systems Software	94%	114%	98%	123%	95%	152%	112%	NA	100%	101%	103%
Computer Support Specialists	99%	116%	83%	101%	100%	119%	112%	124%	100%	129%	104%
Computer Systems Analysts	79%	94%	84%	106%	90%	97%	90%	95%	100%	86%	83%
Network and Computer Systems Administrators	84%	92%	84%	113%	84%	82%	87%	106%	100%	89%	84%
Network Systems and Data Communications Analysts	96%	110%	104%	113%	78%	114%	102%	133%	100%	105%	94%
Architecture and Engineering											
Chemical Engineers	116%	NA	115%	142%	112%	123%	142%	115%	100%	114%	133%
Computer Hardware Engineers	101%	95%	105%	119%	90%	165%	92%	NA	100%	90%	97%
Electrical Engineers	87%	100%	82%	134%	108%	103%	98%	100%	100%	96%	101%
Electronics Engineers, Except Computer	89%	95%	88%	NA	111%	112%	102%	NA	100%	107%	98%
Industrial Engineers	116%	111%	108%	166%	119%	138%	120%	125%	100%	121%	118%
Mechanical Engineers	129%	138%	96%	147%	136%	126%	144%	125%	100%	131%	125%
Petroleum Engineers	NA	NA	100%	146%	NA	NA	NA	NA	100%	NA	NA
Electrical and Electronic Engineering Technicians	93%	113%	113%	117%	107%	129%	100%	115%	100%	117%	110%
Surveying and Mapping Technicians	100%	130%	110%	102%	143%	130%	115%	136%	100%	97%	128%
Life, Physical, and Social Science Occupations											
Chemists	103%	121%	107%	151%	129%	117%	134%	93%	100%	115%	125%
Environmental Scientists and Specialists, Including Health	68%	NA	59%	88%	81%	74%	71%	93%	100%	73%	74%
Agriculture and Food Science Technicians	67%	NA	NA	NA	46%	59%	93%	NA	100%	58%	NA
Chemical Technicians	95%	107%	91%	145%	113%	92%	123%	105%	100%	107%	101%
Geological and Petroleum Technicians	NA	NA	112%	NA	NA	NA	NA	NA	100%	NA	NA
Healthcare Practitioners and Technical											
Medical and Clinical Laboratory Technologists	82%	90%	93%	98%	99%	100%	87%	91%	100%	78%	96%
Medical and Clinical Laboratory Technicians	72%	84%	81%	98%	90%	88%	74%	100%	100%	72%	87%
Diagnostic Medical Sonographers	83%	95%	91%	68%	121%	90%	85%	97%	100%	73%	90%
Radiologic Technologists and Technicians	76%	88%	86%	101%	94%	96%	89%	100%	100%	78%	90%
Licensed Practical and Licensed Vocational Nurses	78%	107%	84%	111%	87%	100%	94%	116%	100%	79%	92%
Medical Records and Health Information Technicians	90%	117%	108%	114%	110%	111%	87%	120%	100%	91%	102%
Office and Administrative Support											
Data Entry Keyers	89%	91%	91%	97%	93%	97%	87%	99%	100%	85%	98%

Notes: NA means data not available.
Percentages derived by dividing the Metropolitan New Orleans Area's mean annual wage by the competitive metropolitan area.
Mean means the wages between the smallest and largest amounts.

Source: Bureau of Labor Statistics, U.S. Department of Labor.

APPENDIX TABLE F. WAGES RANKINGS BY SELECTED TECHNICAL OCCUPATION, COMPETITIVE METROPOLITAN AREAS, 2000

Metropolitan Area	Management	Computer/ Mathematical	Architecture/ Engineering Sciences	Physical and Social Sciences	Health Care	Office/ Administrative
Baltimore	2	3	5	2	2	3
Birmingham	10	8	6	5	7	4
Houston	1	1	1	1	5	4
Jackson	9	10	11	11	6	6
Jacksonville	5	2	8	8	10	7
Memphis	8	9	7	7	8	8
Miami	6	7	10	10	3	2
Mobile	11	11	2	3	11	10
New Orleans	**7**	**6**	**9**	**9**	**9**	**11**
Portland, OR	4	4	4	6	1	1
Tampa	3	5	3	4	4	9

Notes: Rankings based on averages of data found in Appendix Table D.
The higher the ranking the higher the average wages.

Sources: Bureau of Labor Statistics, U.S. Department of Labor and Hammer, Siler, George Associates.

APPENDIX TABLE G. LABOR FORCE AND UNEMPLOYMENT, 2002

	Labor		Unemployment	
Metropolitan Area	**Force**	**Employed**	**Number**	**Rate**
Baltimore	1,330.7	1,270.0	60.7	4.6%
Birmingham	483.4	463.2	20.2	4.2%
Houston	2,286.4	2,145.9	140.5	6.2%
Jackson	232.6	222.2	10.4	4.5%
Jacksonville	594.7	563.3	31.4	5.3%
Memphis	577.6	547.5	30.1	5.2%
Miami	1,107.3	1,027.4	79.9	7.2%
Mobile	276.9	260.9	16.0	5.8%
New Orleans	**608.1**	**576.6**	**31.5**	**5.2%**
Portland, OR	1,071.8	1,008.6	63.2	5.9%
Tampa	1,300.1	1,243.9	56.2	4.3%

Notes: Data in thousands for July 2002.
The higher the unemployment rate the worse off is the economy.

Source: Bureau of Labor Statistics, U.S. Department of Labor.

	Rankings			
Baltimore	2	2	4	8
Birmingham	9	9	9	11
Houston	1	1	1	2
Jackson	11	11	11	9
Jacksonville	7	7	7	5
Memphis	8	8	8	6
Miami	4	4	2	1
Mobile	10	10	10	4
New Orleans	**6**	**6**	**6**	**6**
Portland, OR	4	5	3	3
Tampa	3	3	5	10

APPENDIX TABLE H. POPULATION TRENDS, 1990-2000

Metropolitan Area	1990	2000	1990-2000 Change Number	1990-2000 Change Percent
Baltimore	2,382,172	2,552,994	170,822	7.2%
Birmingham	840,140	921,106	80,966	9.6%
Houston	3,731,131	4,669,571	928,440	24.9%
Jackson	395,396	440,801	45,405	11.5%
Jacksonville	906,727	1,100,491	193,764	21.4%
Memphis	1,007,306	1,135,614	128,308	12.7%
Miami	3,192,582	3,876,380	683,798	21.4%
Mobile	476,923	540,258	63,335	13.3%
New Orleans	**1,285,270**	**1,337,726**	**52,456**	**4.1%**
Portland, OR	1,515,452	1,918,009	402,557	26.6%
Tampa	2,067,959	2,395,997	328,038	15.9%

Note: A higher percent change ranking indicates greater relative expansion of market opportunities.

Source: Bureau of the Census, U.S. Department of Commerce.

			Rankings	
Baltimore	3	3	6	10
Birmingham	9	9	8	9
Houston	1	1	1	2
Jackson	11	11	11	8
Jacksonville	8	8	5	3
Memphis	7	7	7	7
Miami	2	2	2	3
Mobile	10	10	9	6
New Orleans	**6**	**6**	**10**	**11**
Portland, OR	5	5	3	1
Tampa	4	4	4	5

APPENDIX TABLE I. EDUCATION CHARACTERISTICS

Metropolitan Area	2000 Students/ Capita	2000 Student/ Teacher	1998 Exp. Per Student	2000 Non-English Speaking Number	2000 Non-English Speaking Percent	2000 Poverty Rate
Baltimore	16.9	16.9	$6,853	3,634	0.9%	29%
Birmingham	17.8	15.6	$4,999	1,697	1.1%	16%
Houston	22.1	16.6	NA	139,518	16.9%	20%[b]
Jackson	18.9	16.4	$4,871	216	0.3%	21%
Jacksonville	20.4	18.7	$4,985	2,375	1.3%	13%
Memphis	20.4	17.5[a]	$5,349	198	0.1%	21%[b]
Miami	11.6	19.6	$5,952	66,719	18.1%	20%
Mobile	18.4	15.6	$4,538	1,429	1.6%	27%
New Orleans	**16.0**	**15.8**	**$5,435**	**4,963**	**2.3%**	**23%**
Portland, OR	20.4	20.6	NA	17,558	5.7%	15%
Tampa	16.7	16.9	$5,380	21,328	6.2%	20%

Notes: NA means data not available.

[a] Memphis data based on Crittenden County, Arkansas and DeSoto County, Mississippi.

[b] 1997 data.

Exp. means expenditures.

Dollar data in 1998 dollars.

Higher student-teacher ratio, percent of non-English speaking students, and poverty rates generally indicate an expectation of lower levels of education achievement. A high expenditure per pupil generally indicates more and better education materials and equipment and better prepared students.

Source: National Center for Education Statistics, U.S. Department of Education and the Bureau of the Census, U.S. Department of Commerce

				Rankings		
Baltimore	8	5	1	6	9	1
Birmingham	7	10	6	8	8	9
Houston	1	7	-	1	2	6
Jackson	5	8	8	10	7	4
Jacksonville	2	4	7	7	10	11
Memphis	2	3	5	11	11	4
Miami	11	2	2	2	1	6
Mobile	6	10	9	9	5	2
New Orleans	**10**	**9**	**3**	**5**	**6**	**3**
Portland, OR	2	1	-	4	4	10
Tampa	9	5	4	3	3	6

APPENDIX TABLE J. EDUCATIONAL ATTAINMENT SHARES AS A PERCENTAGE OF POPULATION, COMPETITIVE METROPOLITAN AREA, 2000

Metropolitan Area	Less Than 9th Grade	9th to 12th Grade, No Diploma	High School Graduate (Includes Equivalency)	Some College, No Degree	Associate Degree	Bachelor's Degree	Graduate or Professional Degree
Baltimore	5.4%	12.7%	27.1%	20.2%	5.4%	17.3%	11.9%
Birmingham	5.9%	13.5%	28.1%	22.2%	5.6%	16.2%	8.5%
Houston	11.2%	12.9%	22.3%	21.6%	4.8%	18.2%	9.0%
Jackson	5.9%	12.9%	22.8%	24.0%	6.4%	18.4%	9.7%
Jacksonville	4.1%	12.2%	29.1%	24.1%	7.5%	15.5%	7.4%
Memphis	6.4%	13.8%	27.9%	23.9%	5.2%	14.9%	7.8%
Mobile	6.0%	15.8%	31.3%	21.6%	5.5%	12.9%	6.9%
New Orleans	7.4%	14.9%	28.4%	22.6%	4.2%	14.4%	7.4%
Portland, OR	4.3%	8.3%	23.4%	27.5%	6.7%	20.0%	9.9%
Tampa	5.2%	13.3%	30.0%	22.4%	7.3%	14.3%	7.3%

Notes: Data not provided for Miami.
Higher rankings in the categories representing more education indicate a more highly qualified workforce.

Source: Bureau of the Census, U.S. Department of Commerce.

				Rankings			
Baltimore	7	8	7	10	7	4	1
Birmingham	5	1	5	7	5	5	5
Houston	1	6	10	8	9	3	4
Jackson	5	6	9	3	4	2	3
Jacksonville	10	9	3	2	1	6	7
Memphis	3	3	6	4	8	7	6
Mobile	4	1	1	8	6	10	10
New Orleans	2	2	4	5	10	8	7
Portland, OR	9	10	8	1	3	1	2
Tampa	8	5	2	6	2	9	9

APPENDIX TABLE K. HIGH SCHOOL DROPOUT RATES, METROPOLITAN NEW ORLEANS AREA, 1998-2000

	1999-2000		1998-1999	
Parish	**Percent**	**Number**	**Percent**	**Number**
Jefferson	**11.0%**	**1,924**	**11.0%**	**1,629**
Orleans	9.0%	2,109	12.5%	2,993
Plaquemines	2.8%	43	5.0%	77
St. Bernard	8.0%	216	7.5%	210
St. Charles	7.4%	232	5.9%	186
St. James	9.0%	114	8.0%	103
St. John	7.7%	149	11.1%	225
St. Tammany	7.8%	802	6.4%	646

Note: Higher rankings of percents indicate a less well prepared workforce.

Source: District Composite Reports from the Louisiana Department of Education.

		Rankings		
Jefferson	**1**	**2**	**3**	**2**
Orleans	2	1	1	1
Plaquemines	8	8	8	8
St. Bernard	4	5	5	5
St. Charles	7	4	7	6
St. James	2	7	4	7
St. John	6	6	2	4
St. Tammany	5	3	6	3

TABLE L. FEDERAL FREE LUNCH PROGRAM, PARTICIPATION, METROPOLITAN NEW ORLEANS AREA, 1999-2000

Parish	Share
Jefferson	**67.0%**
Orleans	74.6%
Plaquemines	53.3%
St. Bernard	51.8%
St. Charles	42.0%
St. James	71.6%
St. John	77.4%
St. Tammany	27.6%

Note: Higher percents indicate the possibility of lower levels of education achievement.

Source: Louisiana Department of Education.

APPENDIX TABLE M. STANDARDIZED TEST AVERAGE COMPOSITE SCORES, METROPOLITAN NEW ORLEANS AREA, 1998-2001

Parish	2000-2001	1999-2000	1998-1999
Jefferson	**18.9**	**18.6**	**18.8**
Orleans	17.2	17.3	17.5
Plaquemines	18.8	19.2	18.1
St. Bernard	19.5	19.6	19.3
St. Charles	20.2	20.0	20.1
St. James	18.0	18.1	17.6
St. John	17.0	17.3	17.2
St. Tammany	21.1	21.3	21.1

Note: Higher scores and rankings indicate more high school students are better prepared for college and the workforce.

Source: District Composite Reports from the Louisiana Department of Education.

		Rankings	
Jefferson	**4**	**5**	**4**
Orleans	7	7	7
Plaquemines	5	4	5
St. Bernard	3	3	3
St. Charles	2	2	2
St. James	6	6	6
St. John	8	7	8
St. Tammany	1	1	1

APPENDIX TABLE N. DEVELOPMENTAL COURSE ENROLLMENT OF COLLEGE FRESHMEN, METROPOLITAN NEW ORLEANS AREA, 1998-2001

	2000-2001		1999-2000		1998-1999	
Parish	**Freshmen**	**Percent Enrolled**	**Freshmen**	**Percent Enrolled**	**Freshmen**	**Percent Enrolled**
Jefferson	**901**	**57.0%**	**913**	**57.7%**	**919**	**57.6%**
Orleans	1,288	58.0%	1,280	64.4%	1,287	63.8%
Plaquemines	134	45.0%	101	56.4%	112	50.0%
St. Bernard	246	44.0%	228	50.9%	257	49.8%
St. Charles	309	37.0%	292	29.8%	242	36.8%
St. James	115	42.0%	106	44.3%	116	61.2%
St. John	101	54.0%	97	59.8%	106	57.5%
St. Tammany	948	27.0%	808	26.9%	787	26.4%

Note: The higher the percents the less well prepared for college are students.

Source: District Composite Reports from the Louisiana Department of Education.

			Rankings			
Jefferson	**3**	**2**	**2**	**3**	**2**	**3**
Orleans	1	1	1	1	1	1
Plaquemines	6	4	7	4	7	5
St. Bernard	5	5	5	5	4	6
St. Charles	4	7	4	7	5	7
St. James	7	6	6	6	6	2
St. John	8	3	8	2	8	4
St. Tammany	2	8	3	8	3	8

APPENDIX TABLE O. EDUCATIONAL ATTAINMENT BY PARISH, 2000

Parish	Less Than High School	High School	Some College	College Degree	Graduate Degree
Jefferson	**16.4%**	**35.9%**	**24.5%**	**16.6%**	**6.7%**
Orleans	22.6%	27.6%	22.2%	17.4%	10.2%
Plaquemines	29.4%	39.5%	19.9%	8.6%	2.7%
St. Bernard	22.5%	46.3%	21.4%	7.4%	2.4%
St. Charles	18.2%	40.5%	22.7%	15.0%	3.7%
St. James	27.1%	47.0%	14.8%	7.8%	3.3%
St. John	19.5%	44.3%	21.3%	11.2%	3.7%
St. Tammany	15.2%	31.8%	24.5%	20.4%	8.2%

Notes: Population age 25-years-old and over.
Higher rankings in the categories representing more education indicate a more highly qualified workforce.

Source: Easy Analytic Software, Inc.

			Rankings		
Jefferson	**7**	**6**	**1**	**3**	**3**
Orleans	3	8	4	2	1
Plaquemines	1	5	7	6	7
St. Bernard	4	2	5	8	8
St. Charles	6	4	3	4	4
St. James	2	1	8	7	6
St. John	5	3	6	5	4
St. Tammany	8	7	1	1	2

APPENDIX TABLE P. HIGHER EDUCATION INSTITUTIONS AND ENROLLMENT, COMPETITIVE METROPOLITAN AREAS, 2001

	Two Year		Four-Year	
Metropolitan Area	**Number**	**Enrollment**	**Number**	**Enrollment**
Baltimore	9	55,426	20	88,792
Birmingham	6	13,215	8	27,274
Houston	17	116,375	14	85,279
Jackson	2	15,811	10	17,912
Jacksonville	3	30,515	10	21,482
Memphis	5	14,520	12	29,455
Miami	15	92,796	20	87,974
Mobile	3	7,806	5	17,029
New Orleans	**5**	**15,478**	**14**	**54,172**
Portland, OR	7	56,889	16	35,868
Tampa	7	38,344	14	62,837

Source: The 2002 Higher Education Directory published by Higher Education Publications, Inc. Falls Church, VA.

			Rankings	
Baltimore	3	4	1	1
Birmingham	6	10	10	8
Houston	1	1	4	3
Jackson	11	7	8	10
Jacksonville	9	6	8	9
Memphis	7	9	7	7
Miami	2	2	1	2
Mobile	9	11	11	11
New Orleans	**7**	**8**	**4**	**5**
Portland	4	3	3	6
Tampa	4	5	4	4

APPENDIX TABLE Q. SCIENCE AND ENGINEERING RESEARCH AND DEVELOPMENT FUNDING TRENDS, COMPETITIVE METROPOLITAN AREAS, 1995-2000

			1995-2000 Change	
Metropolitan Area	**1995**	**2000**	**Amount**	**Percent**
Baltimore	$1,030,455	$1,157,641	$127,186	12.3%
Houston	$536,780	$736,810	$200,030	37.3%
New Orleans	**$124,536**	**$252,470**	**$127,934**	**102.7%**
Birmingham	$179,071	$233,461	$54,390	30.4%
Miami	$163,656	$180,444	$16,788	10.3%
Portland, OR	$94,608	$149,777	$55,169	58.3%
Tampa	$104,612	$145,397	$40,785	39.0%
Memphis	$16,513	$72,656	$56,143	340.0%
Jackson	$5,594	$12,027	$6,433	115.0%
Mobile	$15,142	$9,865	$-5,277	-34.9%

Notes: Data not available for Jacksonville or for LSU and the University of New Orleans in 1995.
The University of Tennessee Health Science Center data is for 1998.
Dollar data in thousands of 2000 constant dollars.
Higher funding levels indicate more opportunities for commercialization of resulting new products and services and for technology job growth.

Sources: National Science Foundation and Hammer, Siler, George Associates.

APPENDIX TABLE R. RESEARCH AND DEVELOPMENT FUNDING SCIENCES AND ENGINEERING, JEFFERSON PARISH AREA UNIVERSITIES, 2000

Field	A	B	C	D	E	F	G
Engineering	0	0	$12,492	$6,697	0	$563	0
Physical Sciences	$677	$264	4,698	2,784	$83	256	0
Environmental Sciences	0	0	1,387	1,448	0	229	0
Mathematics	0	0	274	730	0	249	0
Computer Sciences	0	0	203	0	0	138	0
Life Sciences	1,919	0	458	70,301	100	289	$55,793
Psychology	0	0	538	308	0	0	0
Social Sciences	0	0	2,970	2,097	0	0	0
Other Sciences	829	0	0	5,370	0	0	0
Total	**$3,425**	**$264**	**$23,020**	**$89,785**	**$183**	**$1,724**	**$55,793**

Notes: University code:
A Xavier University
B Dillard University
C University of New Orleans
D Tulane University
E Southern University
F Loyola College
G Louisiana State University Health Sciences
Data in thousands of dollars.
Higher funding levels indicate more opportunities for commercialization of resulting new products and services and for technology job growth.

Source: National Science Foundation.

APPENDIX TABLE S. COMMUTING AND TRAFFIC CONGESTION, COMPETITIVE METROPOLITAN AREAS, 1999

Metropolitan Area	Per Capita: Annual Hrs. of Traffic Delay	Per Capita: Annual Excess Fuel Consumed	Per Capita: Total Congestion Cost	Average System Speed: Freeway	Average System Speed: Arterial	Roadway Congestion Index
Baltimore	44	76	$815	53	31	1.07
Houston	50	76	$850	44	29	1.10
Jacksonville	30	46	$520	52	30	1.00
Memphis	22	33	$375	52	31	0.98
Miami	42	61	$705	43	28	1.23
New Orleans	**18**	**26**	**$305**	**50**	**30**	**0.99**
Portland, OR	42	73	$795	49	30	1.24
Tampa	35	50	$590	50	28	1.10

Note: Data not provided for Birmingham, Jackson, or Mobile.
Fuel data in gallons.
Speed data in miles per hour.
Higher traffic delay, average system speed, excess fuel consumed, and congestion index rankings indicate better highway service. Higher congestion cost rankings indicate poorer highway service.

Source: Texas Transportation Institute.

	Rankings					
Baltimore	2	1	2	1	1	5
Houston	1	1	1	7	6	3
Jacksonville	6	6	6	2	3	6
Memphis	7	7	7	2	1	8
Miami	3	4	4	8	7	2
New Orleans	**8**	**8**	**8**	**4**	**3**	**7**
Portland, OR	3	3	3	6	3	1
Tampa	5	5	5	4	7	3

APPENDIX TABLE T. AIR CARGO, COMPETITIVE METROPOLITAN AREAS, 2000

Airport	Weight
Memphis	5,485,910,280
Miami	3,620,035,736
Houston	942,727,940
Tampa	215,760,580
New Orleans	**190,325,111**
Portland, OR	162,977,200
Jacksonville	134,327,188
Birmingham	89,749,084
Baltimore	73,231,300
Jackson	36,899,368
Mobile	1,857,972

Notes: Data in pounds enplaned, deplaned, and mail for 2000.
Houston includes the International and Hobby airports.
Higher cargo movement weights indicate greater airport cargo capacity.

Source: U.S. Federal Aviation Administration.

APPENDIX TABLE U. PROSPECTIVE TECHNOLOGY PARK SITES, JEFFERSON PARISH, 2002

Location	Size	Water	Sewer	Major Highway	Zoning	Remarks
A. Manhattan and Gretna Blvds.	77	Y	Y	Manhattan Blvd.	Mixed Use	Adjacent to retail uses
B. Peters Road at Horace	70	Y	N	Lapalco Blvd.	Industrial	Industrial corridor
C. Peters Road at Bayou Road	30	Y	N	Peters Road	Industrial	Near Boomtown Casino
D. West Bank Expressway at Macarthur Blvd.	20	Y	Y	West Bank Expressway	Industrial	Good access to business services
E. 4th Street at Jung Blvd.	50	Y	Y	West Bank Expressway	Industrial	Rail service
F. Bridge City Avenue at River Road	756	Y	N	U.S. 90	Industrial	Former railroad property
G. Peters and Concord Roads	240			Peters Road	Residential	Near Boomtown Casino. Needs bridge and sewage treatment plant
H. Manhattan Blvd. at 3rd Street	40	Y	Y	Manhattan Blvd.	Residential	Platted lots
I. Behrman Highway at Country Club Drive	64	Y	Y	Behrman Highway	Residential	Former golf course partially in New Orleans
J. Destrehan Avenue at Eastview	200	Y	Y	Destrehan Avenue	Residential	Destrehan to be widened in 2005
K. River Road at U.S. 90	100e	Y	N	U.S. 90	Industrial	Adjacent to Avondale Shipyard
L. Time Saver Avenue at 10th Street	29	Y	Y	Hickory Avenue	Industrial	Existing industrial park
M. Barataria and Lapalco Blvds.	45	Y	Y	Lapalco Blvd.	Retail	Former shopping center
N. Airline Road and George Street	20e	Y	Y	Airline Road	Industrial	Adjacent to airport

Notes: Infrastructure located nearby if not on-site if Y.
Size data in gross acres.
e means estimate.
Site A is part of the South New Orleans Subdivision Tract being master planned by JEDCO.

Sources: JEDCO, Latter & Blum Realtors, Jack Stumpf & Associates, and Hammer, Siler, George Associates.

APPENDIX TABLE V. COST OF LIVING INDEX, COMPETITIVE METROPOLITAN AREAS, 2000

Metropolitan Area	Composite	Groceries	Housing	Utilities	Trans-portation	Health Care	Miscellaneous Goods/Services
Baltimore	94.1	90.2	87.4	103.1	99.4	91.0	98.3
Birmingham	96.4	105.6	86.3	94.3	98.0	90.2	101.6
Houston	91.9	88.8	80.1	95.9	108.2	102.8	95.8
Jackson	89.5	85.0	90.0	95.3	90.7	73.0	92.1
Jacksonville	95.0	103.2	91.3	84.2	94.9	87.3	98.0
Memphis	89.9	94.5	80.7	80.8	96.7	95.2	94.8
Miami[a]	99.4	102.9	87.1	107.7	99.8	98.8	106.0
Mobile	91.8	92.7	83.0	100.4	94.6	82.2	97.4
New Orleans	**98.6**	**99.1**	**88.8**	**109.2**	**104.5**	**92.0**	**103.3**
Portland, OR	106.1	109.1	100.9	103.0	108.7	111.9	108.1
Tampa	96.8	97.7	92.4	89.9	110.5	99.4	97.3

Notes: Indexes are percents compared to all places surveyed in the Untied States.
[a] Data for Orlando as being most comparable to Miami.
Higher rankings indicate high cost metropolitan areas compared to the United States.

Source: American Chamber of Commerce Researchers Association.

				Rankings			
Baltimore	7	9	6	3	5	6	5
Birmingham	5	2	8	8	7	8	4
Houston	8	11	11	6	3	2	9
Jackson	11	10	4	7	11	11	11
Jacksonville	6	3	3	10	10	9	6
Memphis	10	7	10	11	8	5	10
Miami	2	4	7	2	6	4	2
Mobile	9	8	9	5	9	10	7
New Orleans	**3**	**5**	**5**	**1**	**4**	**5**	**3**
Portland, OR	1	1	1	4	2	1	1
Tampa	4	6	2	9	1	3	8

APPENDIX TABLE W. SELECTED TAX RATES, COMPETITIVE METROPOLITAN AREAS, 2001

Metropolitan Area	State Sales Tax	Corporate Income Tax	Personal Income Tax
Baltimore	5%	7%	2 to 4.8%
Birmingham	2 to 4%	6.5%	2 to 5%
Houston	6.25%	NA	NA
Jackson	7%	3 to 5%	3 to 5%
Jacksonville	6%	5.5%	None
Memphis	6%	6%	6%[a]
Miami	6%	5.5%	None
Mobile	2 to 4%	6.5%	2 to 5%
New Orleans	**4%**	**4 to 8%**	**2 to 6%**
Portland, OR	-	6.6%	5 to 9%
Tampa	6%	5.5%	None

Notes: [a] Only applies to dividends and interest.
NA means data not available
Higher rankings indicate higher tax rates.

Source: State Tax Facts 2001.

		Rankings	
Baltimore	8	1	4
Birmingham	9	3	4
Houston	2	-	-
Jackson	1	10	3
Jacksonville	3	5	8
Memphis	3	5	1
Miami	3	5	8
Mobile	9	3	4
New Orleans	**7**	**9**	**4**
Portland, OR	11	2	2
Tampa	3	5	8

APPENDIX TABLE X. TAXES AND EXPENDITURES, COMPETITIVE METROPOLITAN AREAS, 1997

Metropolitan Area	Taxes per Capita	Expenditures Per Capita	Expenditures Education
Birmingham	$934	$2,197	40.5%
Houston	$1,262	$2,460	46.9%
Jackson	$632	$2,004	48.2%
Jacksonville	$796	$2,314	44.3%
Memphis	$834	$2,375	39.0%
Miami	$1,151	$3,679	34.1%
Mobile	$665	$1,964	42.0%
New Orleans	**$1,091**	**$2,392**	**35.4%**
Portland, OR	$1,107	$3,017	42.2%
Tampa	$919	$2,501	38.8%

Notes: Dollar data in current 1997 dollars.
Taxes are from general revenue yields to local taxing jurisdictions.
Education expenditures are share of total expenditures.
Baltimore data not available.

Source: City and County Data Book 2001.

	Rankings		
Birmingham	5	8	6
Houston	1	4	2
Jackson	10	9	1
Jacksonville	8	7	3
Memphis	7	6	7
Miami	2	1	10
Mobile	9	9	4
New Orleans	**4**	**5**	**9**
Portland, OR	3	2	5
Tampa	6	3	8

APPENDIX TABLE Y. FIBER OPTIC LINES PERMITTED, JEFFERSON PARISH, 2000-2002

City	2000	2001	2002	Total
Avondale	-	-	1,601	1,601
Gretna	-	-	900	900
Harahan	-	-	480	480
Harvey	-	3,684	3,268	6,952
Kenner	-	690	14	704
Marrero	-	5,590	2,527	8,117
Metairie	72,028	5,617	3,746	81,391
River Ridge	-	-	437	437
Tarrytown	-	4,260	-	4,260
Total	**72,028**	**19,841**	**12,973**	**104,842**

Notes: Data in lineal feet.
2002 data through September.

Source: Jefferson Parish Streets Department.

APPENDIX TABLE Z. COMPETITIVE METROPOLITAN AREA IMAGE RANKINGS

Metropolitan Area	A	B	C	D	E	F
Baltimore	34	81	50*L*	30	186	47
Birmingham	35	110	8	12	236	47
Houston	8	44	17*L*	17	4	75
Jackson	83	105	7*L*	20	281	58
Jacksonville	40	94	18*L*	11	169	93
Memphis	49	114	25	8	181	102
Miami	17	131	41*L*	23	292	123
New Orleans	**21**	**194**	**43*L***	**39**	**132**	**115**
Portland, OR	26	55	53*L*	32	2	59
Tampa	4	17	34*L*	26	220	80
Number Ranked	354	200	81/61*L*	50	315	125

Notes: Periodical code:

A Places Rated Almanac
B Forbes/Milken Institute Best Places
C Entrepreneur
D Inc.
E Industry Week
F ING Group

L means large city category composed of 61 areas. Rankings by Entrepreneur of the remaining areas were of 81 mid-sized areas.

The higher the ranking the better the image.

Source: America's Top Rated Cities: A Statistical Handbook 2002.

APPENDIX TABLE AA. ARTS AND CULTURE INDICATORS, COMPETITIVE METROPOLITAN AREAS, 2000

Metropolitan Area	Major Museum	Performing Arts	Libraries		
			Number	Books	Circulations
Baltimore	6	4	80	6,836,648	25,936,259
Birmingham	1	3	21	2,023,871	4,335,127
Houston	2	3	75	6,724,984	15,169,985
Jackson	1	2	36	941,089	1,385,849
Jacksonville	2	1	23	2,735,408	4,374,505
Memphis	3	3	33	2,017,119	4,736,742
Miami	5	5	32	3,872,287	10,518,317
Mobile	2	1	7	808,713	2,127,893
New Orleans	**4**	**4**	**48**	**2,834,222**	**4, 415,418**
Portland, OR	2	4	26	3,478,827	17,566,152
Tampa	7	6	38	3,271,810	10,650,829

Notes: Component counties or parishes of the metropolitan areas are listed in Appendix A.
Performing arts buildings include performance halls and professional theaters.
The number of libraries includes branches.
The higher the ranking the more arts and cultural resources are available.

Source: Places Rated Almanac 2000.

	Rankings				
Baltimore	2	3	1	1	1
Birmingham	10	6	10	8	9
Houston	6	6	2	2	33
Jackson	10	9	5	10	11
Jacksonville	6	10	9	7	8
Memphis	5	6	6	9	6
Miami	3	2	7	3	5
Mobile	6	10	11	11	10
New Orleans	**4**	**3**	**3**	**6**	**7**
Portland, OR	6	3	8	4	2
Tampa	1	1	4	5	4

APPENDIX TABLE AB. RECREATION INDICATORS, COMPETITIVE METROPOLITAN AREAS, 2000

Metropolitan Area	Major League Team				Golf Courses	Movie Screens
	Football	Basketball	Baseball	Hockey		
Baltimore	X		X		64	214
Birmingham					41	127
Houston	X	X	X		97	435
Jackson					7	21
Jacksonville	X				47	145
Memphis		X			35	175
Miami	X	X	X	X	32	215
Mobile					26	55
New Orleans	**X**	**X**			**32**	**102**
Portland, OR		X			64	192
Tampa	X	X	X	X	116	287

Notes: X means the area has a team.
The higher the ranking the more recreation resources are available.

Source: Places Rated Almanac 2000.

	Rankings	
Baltimore	3	4
Birmingham	6	8
Houston	2	1
Jackson	11	11
Jacksonville	5	7
Memphis	7	6
Miami	8	3
Mobile	**10**	10
New Orleans	8	**9**
Portland, OR	3	5
Tampa	1	2

APPENDIX TABLE AC. CLIMATIC CONDITIONS, COMPETITIVE METROPOLITAN AREAS, 2000

	January		July		Average Annual	Days of
City	High	Low	High	Low	Humidity	Precipitation
Baltimore	41	28	88	72	66	70
Birmingham	56	35	91	69	71	75
Houston	61	42	92	74	75	64
Jackson	57	35	93	68	75	72
Jacksonville	64	40	91	71	72	70
Memphis	51	33	92	72	69	73
Miami	75	59	89	76	72	80
Mobile	61	41	91	73	72	80
New Orleans	**62**	**43**	**91**	**74**	**76**	**77**
Portland	45	33	79	56	73	100
Tampa	69	50	90	74	73	69

Notes: Temperatures in degrees Fahrenheit.
Humidity is the average annual percent moisture in the air compared to the maximum amount the air could contain at the same temperature.

Sources: National Weather Service, Places Rated Almanac 2000, and American Automobile Association.

				Rankings		
Baltimore	11	11	10	6	11	8
Birmingham	8	7	4	9	9	5
Houston	5	1	2	2	2	11
Jackson	7	7	1	10	2	7
Jacksonville	3	6	4	8	6	8
Memphis	9	9	2	6	10	6
Miami	1	1	9	1	6	2
Mobile	5	5	4	5	6	2
New Orleans	**4**	**3**	**4**	**2**	**1**	**4**
Portland, OR	10	9	11	11	4	1
Tampa	2	2	8	2	4	10

APPENDIX TABLE AD. CRIME RATES, COMPETITIVE METROPOLITAN AREAS, 2000

		Violent Crime		Property Crime	
Metropolitan Area	**Population**	**Number**	**Rate Per 100,000**	**Number**	**Rate Per 100,000**
Baltimore	2,551,398	27,150	1,064	114,859	4,502
Birmingham	917,976	5,312	579	41,897	4,564
Houston	4,172,584	29,930	717	180,631	4,329
Jackson					
Jacksonville	1,117,228	10,459	936	55,931	5,006
Memphis	1,146,007	11,530	1,006	66,012	5,760
Miami	2,301,055	27,784	1,207	157,756	6,856
Mobile	544,937	2,986	548	29,502	5,414
New Orleans	**1,334,426**	**10,314**	**773**	**67,309**	**5,044**
Portland, OR	1,905,235	8,615	452	87,544	4,595
Tampa	2,409,501	21,368	887	118,889	4,934

Notes: Estimated total crimes including those reported.
Violent crime is murder, forcible rape, robbery, and aggravated assault.
Property crime is burglary, larceny-theft, and motor vehicle theft.
Data not provided for Jackson.
The higher the crime rate per 100,000 the less safe the metropolitan area is.
In 2000 Jefferson Parish's violent crime rate was 724 and its property crime rate was 5,547.

Source: Federal Bureau of Investigation, U.S. Department of Justice.

			Rankings		
Baltimore	2	3	2	4	8
Birmingham	9	9	8	9	7
Houston	1	1	7	1	10
Jacksonville	8	6	4	8	5
Memphis	7	5	2	7	2
Miami	4	2	1	2	1
Mobile	10	10	9	10	3
New Orleans	**6**	**7**	**6**	**6**	**4**
Portland, OR	5	8	10	5	9
Tampa	3	4	5	3	6

WORKING PAPER VII. ASSESS EDUCATIONAL ATTAINMENT APPENDIX

FOCUS GROUP ATTENDEES

Mr. Mike Garvey – Jefferson Parish Workforce Investment Board

Mr. Al Waller – St. Bernard, Plaquemines, St. Tammany WIB

Ms. Bettina Buval – LA Department of Labor

Ms. Kathleen Mix – Delgado Community College

Ms. Fran Wallace – Louisiana Technical College (Jefferson Campus)

Mr. Justin LeMaitre – Louisiana Technical College (Jefferson Campus)

Mr. Dennis Murphy – Louisiana Technical College (Reserve Campus)

Ms. Judy Mulla, Assistant Superintendent Archdiocese of New Orleans

Mr. Tom Becker – Archdiocese of New Orleans

Ms. Diana Dyer -- Jefferson Parish Schools School-to-Career Director

Ms. Sharon Weger – Jefferson Parish Schools

Ms. Karen Murray – Jefferson Parish Schools

Mr. Paul Forbes – Tulane University, Director of Professional Development Institute

Ms. Mary Scalco – University of New Orleans-Customized Corp. Group

Mr. Brent Lyons – Univ. of Phoenix, Campus Director

Ms. Kathy Hurley – Herzing College

Ms. Sandra Randle – N.O. Centers for Science and Mathematics

Ms. Cindy Reece – New Horizons

Ms. Mary Rose O'Neill – Southeast College of Technology

METROPOLITAN NEW ORLEANS AREA HIGHER EDUCATION INSTITUTIONS

Two-Year

Cameron College
ITT Technical Institute
Louisiana Technical College (four campuses)
Southeast College of Technology
Delgado Community College

Four-Year Plus

Dillard University
Dryades YMCA School of Commerce
Grantham College of Engineering
Herzing College
Louisiana State University Health Sciences Center
University of New Orleans
Loyola University
New Orleans Baptist Theological Seminary
Notre Dame Seminary
Out Lady of Holy Cross College
Saint Joseph Seminary College
Southern University at New Orleans
Tulane University
Xavier University

WORKING PAPER VIII. INVENTORY OF TECHNOLOGY-LED TRAINING PROGRAMS APPENDIX

APPENDIX TABLE VIII-A. SCHOOL-TO-CAREER MAJORS/CAREER CLUSTERS, JEFFERSON PARISH, 2001-2002

Bonnabel	Cuillier	East Jefferson	Joh Ehret	Fisher	L.W. Higgins	Grace King	Riverdale	West Jefferson
Majors	Majors	Majors	Majors	Majors	Majors	Majors	Majors	Majors
Performing Arts (2)	Horticulture (1)	Performing Arts (2)	Performing Arts (2)	Business Admin. (3)	Performing Arts (2)	Performing Arts (2)	Performing Arts (2)	Performing Arts (2)
	Graphic Arts (2)							
Commercial Art (2)	TV Technology (2)							
	General Business (3)							
Fine Arts (2)	Air Conditioning (4)	Fine Arts (2)	Fine Arts (2)		Fine Arts (2)	Fine Arts (2)	Fine Arts (2)	Fine Arts (2)
	Major Appliance (12)	Journalism (2)				Journalism (2)	Speech (2)	
Business Admin.(3)	Maintenance (4)	Business Admin. (3)	Business Admin. (3)		Business Admin. (3)	Business Admin. (3)	Business Admin. (3)	Business Admin. (3)
	Cabinetmaking (4)							
Cooperative Office Education (3)	Carpentry (4)	Cooperative Office Education (3)			Cooperative Office Education (3)			
	Drafting (4)	Nursing Assistant (7)					Nursing Assistant (7)	
	Masonry (4)							
ROTC (13)	TICE (1-16)	ROTC (13)	ROTC (13)		ROTC (13)	ROTC (13)	ROTC (13)	ROTC (13)
	Dental Assistant (7)							
Marketing (14)	Medical Office (7)	Marketing (14)	**Engineering** (15)		Marketing (14)	Marketing (14)	Marketing (14)	Marketing (14)
	Nursing Assistant (7)							
Automotive Technician (16)	Culinary (8)			**Grand Isle** Business Admin. (3)				
	Food Service (8)							
	Computer Electronics (10)							
Academies	Custom Sewing (12)	**Academies**	**Academies**		**Academies**	**Academies**	**Academy**	**Academies**
Construction (4)	Machine Shop (12)	Finance (3)	Finance (3)		Finance (3)	Finance (3)	Medical (7)	Finance (3)
	Welding (12)							
Travel & Tourism (8)	Auto Body (16)	Travel & Tourism (8)	Travel & Tourism (8)		Construction (4)	Travel & Tourism (8)		Travel & Tourism (8)
	Auto Technician (16)							
Culinary (8)	Child Care (9)	Culinary (8)	Culinary (8)					
	Cosmetology (9)		Medical (7)		Medical (7)	Teaching (5)		
Law & Justice (13)			Law & Justice (13)			Medical (7)		
			Teaching (5)			Information Technology (10)		

Notes: Career cluster in which each major is administered.

1. Agriculture & Natural Resources
2. Arts/Audio Visual/Communication
3. Business Administration
4. Construction
5. Education and Training
6. Financial Services
7. Health Science
8. Hospitality and Tourism
9. Human Services
10. Information Technology
11. Legal and Protective Services
12. Manufacturing
13. Public Administration and Government
14. Retail/Wholesale Sales
15. Scientific Research, Engineering and Technology
16. Transportation, Distribution and Logistic Services

Source: Jefferson Parish School System.

APPENDIX TABLE VIII-B. TECHNOLOGY CLUSTER CERTIFICATES AND DEGREES OFFERED, METROPOLITAN NEW ORLEANS AREA, 2002

Degree	College Offering
Arts and Entertainment	
Business Management and Art	Dillard University
Business Management and Music	Dillard University
Costometology	Sidney N. Collier Campus LTC
Media Arts	Tulane University
Music (Recording Industry)	Xavier University
Music Performance	Dillard University
	Loyola University
	University of New Orleans
Performance and Media Arts	Delgado Community College
Theatre Arts	Dillard University
Visual Arts	Dillard University
	Loyola University
BIOTECHNOLOGY	
Biochemistry	Xavier University
Biochemistry and Molecular Biology	LSU Health Sciences Center NO
Biomedical Engineering	Tulane University
Biomedical Equipment Repair	Delgado Community College
Biostatistics	LSU Health Sciences Center NO
Biotechnology Technical Assistant	Nunez Community College
Oil and Gas	
Fitter – Fabricator	West Jefferson Campus LTC
Geology	University of New Orleans
Geophysics	University of New Orleans
Industrial Technology Management	Nunez Community College
Machine Tool Technology	Delgado Community College
Petrochemical	
Chemical Engineering	Tulane University
Industrial Electronics Technology	West Jefferson Campus LTC
Maritime	
Marine Science	Loyola University
Machine Tool Technology	Nunez Community College

APPENDIX TABLE VIII-B. TECHNOLOGY CLUSTER CERTIFICATES AND DEGREES OFFERED, METROPOLITAN NEW ORLEANS AREA, 2002

Degree	College Offering
Construction and Support	
Air Conditioning and Refrigeration	Delgado Community College Jefferson Campus LTC Sidney N. Collier Campus LTC Slidell Campus LTC
Air Conditioning, Refrigeration and Heating	Nunez Community College
Architectural/Design Construction Technology	Delgado Community College
Architecture Engineering	Tulane University
Building Technology Specialist	Jefferson Campus LTC West Jefferson Campus LTC
Carpentry	Delgado Community College Jefferson Campus LTC Sidney N. Collier Campus LTC West Jefferson Campus LTC
Carpentry and Building Construction	Nunez Community College
Civil Construction Technology	Delgado Community College
Computer Aided Drafting	Southeast College of Technology – New Orleans Campus
Construction Management Technology	Delgado Community College
Drafting	Delgado Community College
Drafting and Design Technology	Jefferson Campus LTC Nunez Community College Slidell Campus LTC West Jefferson Campus LTC
Electrical – Electronics Engineering Technology	Delgado Community College
Electrical Construction	Nunez Community College
Electrical Engineering	Tulane University
Electrician	Slidell Campus West Jefferson Campus LTC
Engineering	Xavier University
Engineering Science	Tulane University
Interior Design	Delgado Community College
Physics and Pre-Engineering	Dillard University
Preservation Studies	Tulane University
Track Welding	Nunez Community College
Welding	Jefferson Campus LTC Nunez Community College Sidney N. Collier Campus LTC West Jefferson Campus LTC

APPENDIX TABLE VIII-B. TECHNOLOGY CLUSTER CERTIFICATES AND DEGREES OFFERED, METROPOLITAN NEW ORLEANS AREA, 2002

Degree	College Offering
Environmental Technology	
Environmental Chemistry	Xavier University
Environmental Communications	Loyola University
Environmental Remediation	Nunez Community College
Environmental Sciences	University of New Orleans
Environmental Studies	Loyola University
Environmental Technology	Nunez Community College
Financial Services/Banking	
Accounting	Dillard University
	Loyola University
	Nunez Community College
	Tulane University
	University of New Orleans
	Xavier University
	Delgado Community College
Accounting and Finance	Tulane University
Accounting Technology	Jefferson Campus LTC
	Sidney N. Collier Campus LTC
	Nunez Community College
	Slidell Campus LTC
	West Jefferson Campus LTC
Business	Tulane University
Business Administration	Delgado Community College
	Herzing College
	Loyola University
	Nunez Community College
	University of New Orleans
	Xavier University
Business Management	Dillard University
	Tulane University
Economics	University of New Orleans
Economics and Finance	Dillard University
Finance	University of New Orleans
	Xavier University
International Business and World Languages	Dillard University
Management	University of New Orleans
	Delgado Community College
	Xavier University

APPENDIX TABLE VIII-B. TECHNOLOGY CLUSTER CERTIFICATES AND DEGREES OFFERED, METROPOLITAN NEW ORLEANS AREA, 2002

Degree	College Offering
Marketing	Dillard University University of New Orleans Xavier University
Statistics	Xavier University
Transportation	
Automotive Technology	Jefferson Campus LTC Sidney N. Collier Campus LTC Slidell Campus LTC
Collision Repair Technology	Sidney N. Collier Campus LTC West Jefferson Campus LTC
Mechanical Engineering	Tulane University
Motor Vehicle Technology	Delgado Community College
Information Technology	
Business Information Systems	Southeast College of Technology – New Orleans Campus
CISCO CCNA Certification	Herzing College
Comptia A+ Certification	Herzing College
Comptia Network+ Certification	Herzing College
Computer Electronics Technology	Jefferson Campus LTC Slidell Campus LTC
Computer Engineering	Xavier University
Computer Information Systems	Herzing College Loyola University Nunez Community College Southeast College of Technology – New Orleans Campus Tulane University Xavier University
Computer Information Technology	Delgado Community College
Computer Network Technology	Delgado Community College Herzing College
Computer Networking Technology	Southeast College of Technology – New Orleans Campus
Computer Repair Technology	Delgado Community College
Computer Science	Dillard University Nunez Community College Tulane University

APPENDIX TABLE VIII-B. TECHNOLOGY CLUSTER CERTIFICATES AND DEGREES OFFERED, METROPOLITAN NEW ORLEANS AREA, 2002

Degree	College Offering
Computer Science (Cont.)	University of New Orleans Xavier University
Computer Specialist (Support)	Slidell Campus LTC
Computer Technology	Nunez Community College
Electronics Engineering Technology	Nunez Community College Southeastern College of Technology – New Orleans Campus
Electronics Repair	Delgado Community College
Information Systems	Tulane University
Information Technology	Herzing College Tulane University
MCSA Certification	Herzing College
Microsoft Certified Systems Administrator	Herzing College
Microsoft Certified Systems Engineer	Delgado Community College Herzing College University of New Orleans
Network Management	Herzing College
Network Specialist	Sidney H. Collier Campus LTC
Technology Management	Herzing College
Website Design	Herzing College
Food and Consumer Products	
Culinary Arts	Delgado Community College
Culinary Arts and Occupations	Jefferson Campus LTC Nunez Community College Sidney N. Collier Campus LTC Slidell Campus LTC
Dietetic Technician	Delgado Community College
Food Services Careers	Delgado Community College
Hotel, Restaurant, and Tourism Administration	University of New Orleans
Life Sciences Health Care	
Anesthesiology	LSU Health Science Center NO
Audiology	LSU Health Science Center NO
Biochemistry	LSU Health Science Center NO
Biochemistry and Molecular Biology	LSU Health Science Center NO
Biological Sciences	University of New Orleans

APPENDIX TABLE VIII-B. TECHNOLOGY CLUSTER CERTIFICATES AND DEGREES OFFERED, METROPOLITAN NEW ORLEANS AREA, 2002

Degree	College Offering
Biology	Dillard University Loyola University Tulane University
Cell Biology and Anatomy	LSU Health Sciences Center NO
Certified Nursing Assistant	Nunez Community College
Chemistry	Dillard University University of New Orleans
Chemistry-Premed	Xavier University
Critical Care Medicine	LSU Health Science Center NO
Dental Hygiene	University of New Orleans
Dental Laboratory	Delgado Community College
Dentistry	LSU Health Science Center NO
Dermatology	LSU Health Science Center NO
Diagnostic Medical Sonography	Delgado Community College
Emergency Medical Technician	Delgado Community College Nunez Community College
Emergency Medicine	LSU Health Science Center NO
Experimental Therapeutics	LSU Health Sciences Center NO
Family Medicine	LSU Health Science Center NO
Genetics	LSU Health Science Center NO
Health Information Technology	Delgado Community College
Health Services Office Management	Nunez Community College
Home Health Aide	Nunez Community College
Immunology and Parasitology	LSU Health Sciences Center NO
Internal Medicine	LSU Health Science Center NO
Medical Laboratory Technician	Delgado Community College
Medical Technology	LSU Health Science Center NO University of New Orleans
Medicine	University of New Orleans
Message Therapy	Delgado Community College
Microbiology	LSU Health Sciences Center NO
Neurology	LSU Health Science Center NO
Neuroscience	LSU Health Sciences Center NO
Neurosurgery	LSU Health Science Center NO
Nuclear Medicine Technology	Delgado Community College
Nurse Assistant	Jefferson Campus LTC Sidney H. Collier Campus LTC Slidell Campus LTC West Jefferson Campus LTC

APPENDIX TABLE VIII-B. TECHNOLOGY CLUSTER CERTIFICATES AND DEGREES OFFERED, METROPOLITAN NEW ORLEANS AREA, 2002

Degree	College Offering
Nursing	Delgado Community College
	Dillard University
	Loyola University
	LSU Health Science Center NO
	University of New Orleans
Obstetrics-Gynecology	LSU Health Science Center NO
Occupational Therapy	LSU Health Science Center NO
	University of New Orleans
Occupational Therapy Assistant	Delgado Community College
Ophthalmic Medical Assistant	Delgado Community College
Ophthalmology	LSU Health Science Center NO
Oral Biology	LSU Health Sciences Center NO
Orthopedics	LSU Health Science Center NO
Otorhinolaryngology	LSU Health Science Center NO
Paramedic	Slidell Campus LTC
Pathology	LSU Health Sciences Center NO
Patient Care Technician	Sidney H. Collier Campus LTC
Pediatrics	LSU Health Science Center NO
Pharmacology	LSU Health Sciences Center NO
Pharmacy	University of New Orleans
Pharmacy Technician	Delgado Community College
Physical Therapist Assistant	Delgado Community College
Physical Therapy	LSU Health Science Center NO
	University of New Orleans
Physiology	LSU Health Sciences Center NO
Practical Nursing	Jefferson Campus LTC
	Nunez Community College
	Sidney N. Collier Campus LTC
	Slidell Campus LTC
	West Jefferson Campus LTC
Pre-Health Professions	Loyola University
Pre-Medical and Chemical Engineering	Tulane University
Psychiatry	LSU Health Science Center NO
Public Heath	Dillard University
	LSU Health Science Center NO
Pulmonary	LSU Health Science Center NO
Radiation Therapy	Delgado Community College
Radiologic Technology	Delgado Community College
Radiology	LSU Health Science Center NO

APPENDIX TABLE VIII-B. TECHNOLOGY CLUSTER CERTIFICATES AND DEGREES OFFERED, METROPOLITAN NEW ORLEANS AREA, 2002

Degree	College Offering
Rehabilitation Services Counseling	LSU Health Science Center NO
Respiratory Care Technology	Delgado Community College
Respiratory Therapist	West Jefferson Campus LTC
Speech Language Pathology	LSU Health Science Center NO
Surgery	LSU Health Science Center NO
Surgical Technology	Delgado Community College
Urology	LSU Health Science Center NO
Telecommunications and E-Commerce	
Communications Electronics	Slidell Campus LTC
Mass Communications	Dillard University Xavier University Loyola University
Broadcast Production	Loyola University
Marketing	Tulane University
Visual Communications – Graphic Design	Delgado Community College

Note: The Louisiana Technical College (LTC) System District 1 serving the Metropolitan New Orleans Area has four campuses: Jefferson, Sidney N. Collier, Slidell, and West Jefferson.

Sources: The degrees listed are a representative sample from the websites and/or catalogs of the educational institutions.

PROGRAM DEFINITIONS

The following definitions of work preparedness programs explain the terminology typically used by educators.

Job Shadowing. A process during which students meet with an employee, for an agreed upon period of time, to learn job responsibilities and activities.

Work-Based Learning. Programs offering students paid in-business work experiences, workplace mentoring, and instruction in general workplace competencies.

School-Based Learning. A program conducted in a school setting that offers career awareness, career exploration, and counseling to help interested students identify and pursue their interests, goals, and career majors.

Connecting Activities. Activities that match students with employers. The employers and students are encouraged to participate together in strengthening job placement and continuing education, and in furthering training assistance.

Tech-Prep. A program designed to give students the necessary technical preparation for a career in an occupation. Often these programs prescribe courses for a four-year period; the first two years to be completed at the high school level and the second two years to be completed at the post secondary level.

Integrated Curriculum. Curriculum designed to be consistent with national industry standards for certification. This term also refers to teaching basic skills such as English and mathematics in all curricula.

School-to-Career. A counseling initiative designed to enable students to successfully enter the workplace from an educational institution. In Jefferson Parish this program is based on the 10

National Academy Foundation-prescribed academies and 32 majors which have been established.

FOCUS GROUP ATTENDEES

Mr. Mike Garvey – Jefferson Parish Workforce Investment Board

Mr. Al Waller – St. Bernard, Plaquemines, St. Tammany WIB

Ms. Bettina Buval – LA Department of Labor

Ms. Kathleen Mix – Delgado Community College

Ms. Fran Wallace – Louisiana Technical College (Jefferson Campus)

Mr. Justin LeMaitre – Louisiana Technical College (Jefferson Campus)

Mr. Dennis Murphy – Louisiana Technical College (Reserve Campus)

Ms. Judy Mulla, Assistant Superintendent Archdiocese of New Orleans

Mr. Tom Becker – Archdiocese of New Orleans

Ms. Diana Dyer – Jefferson Parish Schools School-to-Career Director

Ms. Sharon Weger – Jefferson Parish Schools

Ms. Karen Murray – Jefferson Parish Schools

Mr. Paul Forbes – Tulane University, Director of Professional Development Institute

Ms. Mary Scalco – University of New Orleans-Customized Corp. Group

Mr. Brent Lyons – Univ. of Phoenix, Campus Director

Ms. Kathy Hurley – Herzing College

Ms. Sandra Randle – N.O. Centers for Science and Mathematics

Ms. Cindy Reece – New Horizons

Ms. Mary Rose O'Neill – Southeast College of Technology