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JOBS CREATION IN THE ENVIRONMENTAL INDUSTRY IN MICHIGAN AND THE U.S.: SYNTHESIS AND POLICY OPTIONS

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*Highlights from the report “JOBS CREATION AND THE ENVIRONMENTAL INDUSTRY IN MICHIGAN AND THE U.S.” prepared by Management Information Services, Inc., Washington, D.C., for the Building Diagnostic Research Institute, Chevy Chase, Maryland (July 2004); a project of the Jobs and Environment Initiative**

KEY FINDINGS

IN THE U.S., MANY JOBS FOR PEOPLE IN ALL WALKS OF LIFE EXIST TODAY BECAUSE OF ENVIRONMENTAL PROTECTION ACTIVITIES—BUT THIS CONNECTION IS OVERLOOKED

Environmental protection in the U.S. is creating good stable jobs for people in all walks of life — blue-collar, white-collar and high-tech, carpenters, cashiers, electricians, etc.-- a fact that is not truly recognized by decision-makers or the public-at-large. Moreover, environmental protection and jobs creation go hand in hand, and are not in conflict, contrary to general public perception. Indeed, the environmental industry has been overlooked as a major source of employment in the U.S. for many decades. Environmental management, regulation and investment create and protect jobs at a significant level, contrary to long-held policy presumption. Environmental jobs exist across the spectrum of work activities, and may be directly or indirectly created. This report defines “environmental jobs” as those which, “as a result of environmental pressures and concerns, have produced the development of numerous products, processes and services, which specifically target the reduction of environmental impact.”

Each day people in virtually every line of work earn their livelihood thanks to environmental management and investment. But, very few workers realize that their jobs are directly and indirectly tied to, and even dependent on, the environmental industry.

Recognizing the environmental industry as a major source of employment and long-term asset development would be a strategic step toward further socio-economic advancement and environmental stability and enhancement.

MICHIGAN'S ENVIRONMENTAL INDUSTRY, IS A MAJOR EMPLOYER AND ECONOMIC PLAYER, INCLUDING IN MANUFACTURING

MISI estimates that in 2003:

- Sales of the environmental industries in Michigan totaled \$12.9 billion.
- The number of environment-related jobs totaled nearly 217,000.
- The environmental industry in Michigan comprised 3.9 percent of gross state product.
- Environment-related jobs comprised 4.9 percent of Michigan employment.
- Michigan environmental industries accounted for 4.3 percent of the sales of the U.S. environmental industry.
- Environment-related jobs in Michigan comprised 4.4 percent of the total number of environment-related jobs in the U.S.
- Environment-related employment in the state has been increasing in recent years between one and two percent annually.

Especially interesting for a manufacturing-based state such as Michigan is that a high percentage of environmental jobs are found in the manufacturing sector, i.e., 29 percent of private sector environmental jobs are in manufacturing, compared to 17 percent for all other private sector employment. For a state that has been losing traditional manufacturing jobs, and is worried about outsourcing and globalization, the presence of a vibrant environmental industry can be maximized, with significant potential jobs benefit for manufacturing workers.

In short, environmental investment is good for jobs, workers, and long-term economic vitality. It is a reconciling force between economic development and environmental protection—which have traditionally been treated as irreconcilable. The link between jobs creation and environmental protection can be maximized for strategic impact on the jobs outlook of the U.S., and long-term environmental and economic health.

JOBS AND THE NATIONAL ENVIRONMENTAL INDUSTRY

The MISI report presents information about the jobs creation impact and potential of the environmental industry in the state of Michigan, as well as background information on the relationship between jobs impact for the environmental industry in the nation as a whole. The report found that the environmental industry is a major player in both the state and national economy, and that the direct and indirect jobs creation potential of the environmental industry is significant, multi-sectoral, under-appreciated, and could be maximized for broad socio-economic and environmental benefit.

This report summarizes MISI findings on the national environmental industry. MISI research has found that over the past four decades, protection of the environment has grown rapidly to become a major sales-generating, profit-making, job-creating U.S. industry. It is likely that the environmental industry will continue to grow rapidly for the foreseeable future, and MISI forecasts that in the U.S. real expenditures (2003 dollars) will increase from \$301 billion in 2003 to:

- \$357 billion in 2010
- \$398 billion in 2015
- \$442 billion in 2020

Environmental protection generates large numbers of jobs throughout all sectors of the economy and within many diverse occupations. MISI forecasts that U.S. employment created directly and indirectly by environmental protection will increase from 4.97 million jobs in 2003 to:

- 5.39 million jobs in 2010
- 5.76 million jobs in 2015
- 6.38 million jobs in 2020

Firms working in the environmental and related areas employ a wide range of workers at all educational and skills levels and at widely differing earnings levels. Even in environmental companies, most of the employees are not classified as “environmental specialists.” Rather, most of the workers are in occupations such as laborers, clerks, bookkeepers, accountants, maintenance workers, cost estimators, engine assemblers, machinists, assemblers, machine tool operators, mechanical and industrial engineers, welders, tool and die makers, mechanics, managers, purchasing agents, etc.

IN 2003, THE ENVIRONMENTAL INDUSTRY WAS GENERATING NEARLY 5 MILLION JOBS IN THE U.S.

For perspective, compared to employment in other industries, this is:

- More than ten times the U.S. pharmaceuticals industry
- Nearly six times more than the apparel industry
- Almost three times more than the chemical industry
- Fifty percent more than religious organizations
- Nearly half the employment in hospitals
- Almost one-third the size of the entire construction industry

And the vast majority of the jobs created by environmental protection are standard jobs for accountants, engineers, computer analysts, clerks, factory workers, truck drivers, mechanics, janitors, etc. In fact, most of the persons employed in these jobs are probably

little aware their livelihood is linked to protecting the environment because the work lies outside the easily identified classically “green” sector.

ENVIRONMENT INDUSTRY IS LARGER THAN THE TOP FORTUNE 500

The size and scope of the U.S. environmental industry is not fully clear to the public-at-large, decision-makers, or the media. The size and scope of the environmental industry in Michigan is likewise not fully appreciated.

Nationally, the environmental “industry” ranks well above the top of the Fortune 500, and this report estimates that in 2003 protecting the environment generated:

- \$301 billion in total industry sales
- \$45 billion in Federal, state, and local government tax revenues
- \$20 billion in corporate profits

Indeed, the sales and spending of the U.S. environmental industry is larger than that of Wal-Mart, America’s largest corporation.

IN MICHIGAN, ENVIRONMENTAL INVESTMENT LIKELY TO GENERATE HIGH-LEVEL MANUFACTURING JOBS

Jobs creation and environmental investment are not only compatible, they are strongly synergistic, with dollars invested in environmental spending likely to generate greater than proportionate jobs benefit—in all sectors of the economy, including manufacturing. In fact, in Michigan investments in the environment are likely to provide a greater than proportionate assist to Michigan’s manufacturing sector than other sectors.

MICHIGAN’S ENVIRONMENTAL INDUSTRY IS A SIGNIFICANT EMPLOYER, GENERATING NEW JOBS

Environment-related jobs comprised 4.9 percent of Michigan employment, and the report demonstrates that environmental protection is a significant and growing industry in Michigan. Most of the environment-related jobs in Michigan are in the private sector, and these are heavily concentrated in several sectors, including manufacturing, professional, scientific, and technical services, and educational services.

Environmental jobs in Michigan are widely distributed through all occupations and skill levels and, while the number of jobs created in different occupations varies substantially, requirements for virtually all occupations are generated by environmental spending. Thus, in Michigan as in the U.S. generally, the vast majority of the jobs created by environmental protection are standard jobs for all occupations.

ENVIRONMENTAL MANAGEMENT CREATES A SURPRISING VARIETY OF GOOD JOBS—INCLUDING IN MICHIGAN

The importance of environmental protection for jobs is obviously greater for some occupations than others. One would expect that for such occupations obviously linked to environmental activities, such as environmental scientists, engineers, hazardous materials workers, water and liquid waste treatment plant operators, employment demand would be largely dependent on environmental protection activities.

However, for many occupations not traditionally identified as environment-related, a greater than proportionate share of the jobs are also generated by environmental protection.

For example, in Michigan, environmental protection generates:

- More jobs for machinists (966) than for forest and conservation technicians (190)
- More jobs for office clerks (4,118) than for environmental engineers (1,382)
- More jobs for executive secretaries (2,522) than for environmental scientists (1,523)
- More jobs for sales representatives (563) than for geoscientists (272)
- More jobs for truck drivers (2,176) than for hazardous material removal workers (1,210)
- More jobs for janitors (3,040) than for landscaping and grounds workers (1,101)
- More jobs for human resource managers (297) than for medical scientists (225)
- More jobs for security guards (1,115) than for septic tank and sewer cleaners (702)
- More jobs for financial analysis (353) than for chemical engineers (197)

Thus, many workers in Michigan are dependent on environmental protection for their employment, although they often would have no way of recognizing that connection unless it is brought to their attention.

IN MICHIGAN, MANUFACTURING JOBS ARE CREATED BY AND DEPENDENT ON THE ENVIRONMENTAL INDUSTRY

Noteworthy is that the environmental industry is more manufacturing intensive than other average private sector activity in the state.

--29 percent of private sector jobs in the environmental industry are in manufacturing, compared to 17 percent in manufacturing among all private sector industrial activities in Michigan.

--About six percent of the state's manufacturing employment is environment-related – significantly higher than the 4.9 percent average for environmental jobs of total state employment.

Conversely,

--Less than one percent of environmental jobs are in the retail trade sector, compared to 11 percent in retail trade among all private sector jobs in the state.

--Less than one percent of environmental jobs are in the finance and insurance sector, compared to four percent of private sector jobs

--Less than one percent of environmental jobs are in the health care and social service sector, compared to 12 percent of private sector jobs

--Less than one percent of environmental jobs are in the transportation and warehousing sector, compared to two percent of private sector jobs

MICHIGAN'S ENVIRONMENTAL INDUSTRY IS ALSO KEY TO GENERATING AND KEEPING HIGH-TECH JOBS

In addition to the manufacturing sector, MORE THAN 20 PERCENT OF MICHIGAN JOBS IN THE PROFESSIONAL, SCIENTIFIC AND TECHNICAL SERVICES ARE ENVIRONMENTAL JOBS.

MICHIGAN'S ENVIRONMENTAL INDUSTRY GENERATES JOBS IN ALL SECTORS:

- Nearly 29 percent of employment in the utilities sector consists of environmental jobs, primarily water, waste treatment, sanitation, and related facilities.
- More than 12 percent of public administration employment in the state consists of environmental jobs.

- Only very small portions of total state employment in sectors such as food services, entertainment, real estate, finance, insurance, and retail trade are comprised of environmental jobs.

MICHIGAN 'S ENVIRONMENTAL FIRMS EMPLOY PEOPLE THROUGHOUT THE STATE

Environmental companies in MICHIGAN:

- Are located in urban centers, suburbs, small towns, and rural areas.
- Range from small firms of several employees to large firms employing thousands in multiple sites with global business
- Are engaged a full variety of activities, including remediation, manufacturing, testing, analysis, etc.

ENVIRONMENTAL COMPANIES ARE SOME OF THE MOST SOPHISTICATED, HIGH-TECH FIRMS IN MICHIGAN, e.g.:

- American Energy Exchange, Inc., based in Kalamazoo, is a manufacturer of energy recovery equipment built around its patented frost free heat exchanger, and is the second largest manufacturer of this type of energy recovery equipment in the U.S.
- Applied Science & Technology, Inc. provides environmental and training services, and related services.
- Atwell-Hicks, Inc. is a developmental consulting firm specializing in environmental services, civil engineering, surveying, and land planning.
- Clayton Group Services, Inc. is a full-service environmental and health and safety firm.
- Enerex L.L.C. manufactures, designs, markets, distributes, and installs a wide range of wind generators, photovoltaic, solar, and control systems that are engineered for ease of installation and automated control.
- Energy Conversion Devices Inc. is a world leader in the fields of alternative energy generation and storage and advanced information technologies.
- Hubbell, Roth & Clark, Inc., founded in 1915 provides a wide range of environmental engineering and consulting services to municipal, industrial, and private clients.
- Limno-Tech, Inc. is an environmental consulting and engineering firm
- Malcolm Pirnie is one of the largest firms in the U.S. focused on environmental issues, with offices in Detroit, Lansing, and Novi.

- Quantum Compliance Systems, Inc. is an environmental health and safety firm.
- Tetra Tech, Inc. is a leading U.S. provider of environmental consulting, engineering and technical services.
- Wade-Trim is an environmental consulting firm with major activities in wastewater and water treatment, including turnkey electrical services for water resource projects.
- Weston Solutions of Michigan, Inc. (WSMI) is a leading environment and redevelopment firm that provides comprehensive solutions to complex problems for industry and government worldwide

A number of these firms have created significant numbers of new jobs over the past six months, and at a time when Michigan has been losing manufacturing jobs in other sectors.

POLICY OPPORTUNITIES: JOBS CREATION AND THE NEXT TIER OF ENVIRONMENTAL MANAGEMENT AND ECONOMIC DEVELOPMENT

Policy Recommendations and Options—Background and Perspective

In 1997, the environmental industry in the U.S. was on a trajectory to surpass defense spending in importance to the U.S. economy. At the time, environmental spending was projected to reach \$245 billion by 2005, while defense spending was projected to reach \$225-230 billion

Environmental spending has surpassed the 2005 projections already, but so has defense spending. However, absent world events, such as the war in Iraq and increased domestic security expenditures post September 11, 2001, the environmental industry might today indeed surpass defense spending in importance.

Each State Should Create a Jobs and Environment Task Force

Still, strategic policy options exist for the nation as a whole and all states, even counties. A critical immediate recommendation would be for all 50 states to create a “Jobs and Environment Investment Task Force,” with the goal of connecting environmental investment and spending with other governmental agencies and initiatives linked to economic development and workforce training, especially to align tax incentives and other policy tools with pro-active environmental jobs creation. As the above data and this report make clear, investments in environmental spending will pay significant dividends in jobs creation and workforce development in all sectors.

In Michigan, some specific policy suggestions would be:

- 1) An annual Governor's Summit on "Environmental Jobs and Manufacturing"
- 2) Integrating an aggressive environmental jobs component in all of the following: Michigan Strategic Plan; Clean Michigan Initiative; Clean Michigan Fund; State Environmental Sciences Board; Michigan Retired Engineer Technical Assistance Fund; Michigan Energy Office; Department of Environmental Quality; Department of Labor and Economic Growth; Michigan Biomass Energy Program; Michigan Economic Growth Authority; Smart Zone planning; Michigan NextEnergy Program
- 3) An "Environmental Jobs" public education campaign to better communicate the existence, strength, vitality and products of Michigan's environmental jobs and the companies that provide them
- 4) An aggressive recruitment campaign to attract environmental businesses to Michigan and to highlight the leadership role of the state's many environmental firms.
- 5) A specific initiative focused on jobs creation in the automotive sector, based on research, development and marketing of more energy efficient automobiles, cars and trucks.

Maximizing benefits by integrating environmental management with economic development, workforce training and employment policy

Finally, the Michigan Jobs and Environment study has demonstrated that a ripe breakthrough opportunity exists for Michigan and other states to recognize and realize the economic and jobs benefits that could flow from specifically facilitating the growth of environment and environment-related industries. This would be a fresh new arena for economic development initiatives, including the creation of new strong export markets.

No state in the U.S. has yet to fully realize this potential. The scope, diversity and scale of environmental employment today has shown that, rather than viewing environmental spending or compliance costs as economically negative, states should aggressively move to maximize the benefits, short and long-term of environmental spending.

There is no inherent institutional impediment in Michigan, and the existing pro-active policies can be intensified to better maximize jobs creation in the state. While some policies have brought economic intervention to bear on traditional "green" activities; what is needed is "cross-over" so that the environmental industry in its broadest sense becomes integral to economic development plans. With such cross-over, the value of environmental management can be brought to bear on traditional economic development and unemployment policies.

In addition, from the long-term point of view of expanding and deepening the constituency in favor of environmental protection, it would seem that the positive jobs creation impact of environmental investment could create new constituents for environmentalism among all worker groups, including unionized labor in the automotive

industry, thus expanding and diversifying the voice in favor of environmental protection nation-wide, much needed, especially in an era of inter-generational transition.

In sum, the link between jobs creation and environmental management is pivotal for economic development, and presents a strategic and solutions-oriented new policy approach with practical benefits for workers in all communities and walks of life.

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BUILDING DIAGNOSTICS RESEARCH INSTITUTE (BDRI)

BDRI is a not-for-profit organization dedicated to providing the highest level of research, education and training, and public outreach on issues related to the effects of building performance on health, safety, security, and productivity. (www.buildingdiagnostics.org) Dr. James Woods is Executive Director of BDRI. He has 35 years experience in management and consulting in the environmental industry, serving in academia, industry, and as an advisor to DOE, EPA, NIST, and the National Academy of Sciences. He has extensive experience in end-use demand in the residential, commercial, and industrial sectors, environmental factors, and energy modeling, has managed 20 large scale energy and environmental research projects, and is the founder of the Building Diagnostics Research Institute. He received a Ph.D. in Mechanical Engineering from Kansas State University.

MANAGEMENT INFORMATION SERVICES, INC. (MISI)

MISI is an economic research firm with expertise on a wide range of complex issues, including energy, electricity, and the environment (www.misi-net.com). Dr. Roger H. Bezdek is President of Management Information Services, Inc. He has 30 years experience in consulting and management in the environmental, energy, economic forecasting, and regulatory areas, serving in private industry, academia, and the Federal government. He has served as a consultant to the White House, Federal and state government agencies, environmental organizations, and various corporations and research organizations. Dr. Bezdek, is an internationally recognized expert in economic forecasting and environmental analysis, and is the author of four books and of 200 articles in scientific and technical journals. He received his Ph.D. in Economics from the University of Illinois (Urbana). Robert M. Wendling is Vice President of Management Information Services, Inc. He has 28 years experience in consulting and management in the energy, environmental, statistical/econometric modeling, and regulatory areas. He has served in industry as corporate CEO and president and as corporate vice president and in senior positions in the U.S. Department of Commerce and the Department of Energy. He is the author of 75 reports and professional publications on energy and environmental topics and lectures frequently on various energy, forecasting, regulatory, and economic modeling topics. He received an M.A. in Economics from George Washington University.

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