

**IMPACT OF THE LAKE WATER  
SUPPLY PROJECT  
AN INNOVATIVE COOLING AND WATER  
SUPPLY PARTNERSHIP**

Prepared for:

**Monroe County Water Authority**

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**Impact of the Lake Water Supply Project  
An Innovative Cooling and Water Supply Partnership  
May 1998**

**Summary**

The proposed Monroe County Water Authority Lake Water Supply Project promises to create significant new employment, income and tax revenue for Monroe County and its residents. Designed to draw cold water from deep in Lake Ontario, the two phases of the project will enable MCWA to provide process and office cooling for the Xerox Webster complex plus cooling for an additional 5.5 million square feet of office space. This project will stimulate economic growth and improve environmental quality by overcoming one of New York's competitive disadvantages—high cost energy—while reducing demand for electricity generated by fossil fuels.

The stimulative impact of this project could be quite substantial. Assuming that firms from outside the region are attracted to enter Monroe County or that existing firms choose to expand within the county instead of in another community, the aggregate impact—both on-site employment and employment stimulated by the project off-site—could reach 30,000. Added payroll would be about \$700 million, increasing NYS personal income tax revenue by an estimated \$25 million and sales tax revenue (split evenly between the State of New York and Monroe County) by an additional \$20 million.

The construction period is likely to generate the equivalent of 2,300 one-year positions earning more than \$70 million in payroll. Tax receipts from this expenditure would total about \$5 million.

The project is planned in two phases. The first phase is largely consumed by the cooling requirements of the Xerox facility. With 7,800 workers at its Webster site, the energy savings of the chilling facility may assist retention of these jobs in the State of New York and Monroe County, more than offsetting New York's higher energy prices. The retention of these jobs

is worth about \$650 million in direct, indirect and induced payroll and almost \$20 million in sales tax revenue and an additional \$28 million in personal income tax revenue.\*

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\*Employee compensation estimates for the Xerox workforce are almost equal to the estimates for new businesses attracted to the site. This is due to the fact that the *Photographic Equipment and Supplies* industry pays relatively higher wages than the industries used for the analysis of new business.

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## **Staff Team**

Mike Hanmer was instrumental in the development of the methodology and impact estimation used in this project. His contribution was invaluable.

## **Introduction**

Traditionally, the vast bulk of manufacturing and office cooling needs have been met through the use of chlorofluorocarbon (CFC) refrigerant systems. The recent treaty on global warming phases out use of this refrigerant, however, substantially increasing the cost of cooling for businesses across the U.S. Between the CFC phase-out and normal equipment obsolescence, the Xerox Corporation is anticipating a dramatic capital investment in cooling. Rather than invest in traditional cooling, however, a partnership with the Monroe County Water Authority (MCWA) and the New York State Energy Research and Development Authority (NYSERDA) will enable the construction of an alternative cooling system that will benefit the environment through reduced dependence on electricity generated from traditional fuels. In addition to the goal of protecting the local and global environment, this plan was developed to promote economic development and the consolidation, sharing and conservation of natural and financial resources.

The Center for Governmental Research (CGR) was engaged by the MCWA to estimate the economic impact on the Rochester Metropolitan Statistical Area (RMSA) of the construction phases of this plan and the longer-lived impacts from the attraction and retention of businesses to the area. This report documents the impact of expanded business development that is likely to occur in the Webster area as an outgrowth of the MCWA cooling project.

## **Economic Development Potential**

### **Improving the Business Climate Through Lower Energy Costs**

The plan, referred to as the Lake Water Supply Project, will extract water from deep in Lake Ontario and convey the water to a proposed cold water district in the Town of Webster in Monroe County. During the initial phase, the Xerox Corporation will be the primary customer and will use the system for both process and office cooling. As the system will deliver cooling at lower cost than traditional systems, it will help secure the presence of the Xerox facility in the region and the state by offsetting New York's high cost of electrical

power. A key goal of the cold water district, however, is to attract new firms to Monroe County.

Participation by Xerox makes the project feasible as it serves as the “anchor” customer of the cooling district. The purpose of this study is to explore the economic impact of new industrial development attracted to surrounding lands by low cost cooling.

It has been widely observed by national and regional publications that New York’s business climate is inhospitable. Two cost factors are frequently cited to support this impression: First, New York’s state and local tax burden is higher than that of any other state except Alaska whether considered on the basis of population or as a share of personal income. Second, New York residents and businesses pay relatively high prices for energy. The causes for these price differentials are complex and are being addressed in various ways by policymakers and utilities. Nonetheless, the fact of high price remains an obstacle to business growth in the state and the region. While the Lake Water Supply Project will not change the tax structure, it will significantly reduce the cost of cooling for businesses participating in the cooling district, largely offsetting the energy cost differential between Monroe County and our competitors in other parts of the country. CGR does not have enough information to estimate accurately the average impact of the cooling facility on energy costs, however.

## **Project Site**

The Lake Water Supply Project is aimed at providing cold water for cooling to Xerox Corporation’s Village of Webster industrial site and to surrounding industrially-zoned land in both the village and the town. Property records indicate that there is over 1,200 acres of industrially-zoned land that are relatively close to the proposed chiller site within the Town of Webster. Additional industrial land exists in the Village of Webster. Town lands alone contain about six million square feet of structures, most owned and occupied by Xerox. There is more than enough vacant or lightly developed land to accommodate new buildings to be cooled via the proposed process.



## **Economic Impact of Construction**

Construction impact estimates assume that most of the workers can be recruited from the Rochester metropolitan area and that area firms would be the successful low bidders for all major contracts. Employment forecasts reflect the number of full-time, single-year jobs that are likely to be stimulated by the project, both on the project site and off-site with supplier firms. Thus an employment impact of 1000 could imply a single year of construction employing 1000 workers full time or two years of construction of 500 full-time positions each year. No net population growth is anticipated as a result of the project.

### ***Construction: Phase I***

The first phase involves the construction of the lake water intake system. This consists of a series of pipelines and pumping facilities to transmit the water to the chilled water facility and create a chilled water loop for the Xerox Corporation. This phase will cost \$100 million and will enable the withdrawal of 100 million gallons per day (MGD) from deep in Lake Ontario. Project engineers O'Brien & Gere estimate that this volume of water will generate 20,400 tons of cooling.

CGR used an IMPLAN input-output model of the RMSA economy to estimate the impact this construction expenditure would have as it cascaded through the local economy. We expect that the one-time expenditure of \$100 million for the first construction phase will generate a one-time increase in output of about \$111 million. Total employment of about 1,670 "person years" would likely to be stimulated by the project, both on-site and off-site. These workers would earn just over \$52 million.

### ***Construction: Phase II***

The timing of the second construction phase will depend on the demand for cooling by customers added to the industrial zone. Through the addition of an extra intake pipe, extra pipeline, additional heat exchangers and additional pumps, capacity will expand to 150 MGD and 30,600 tons of cooling. The one-time expenditure of \$40 million for this phase will result

in a one-time increase in output of approximately \$45 million, employment of 670 and employee compensation of about \$20 million.

***Water Treatment Plant Construction***

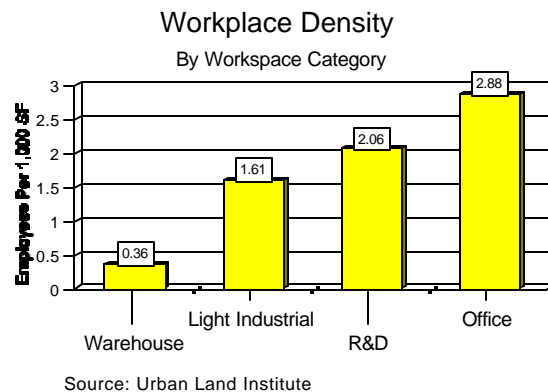
In addition, a water treatment plant designed to treat incoming Lake Ontario water to meet state and federal drinking water standards has been planned to serve residential needs in the area. It is projected that this plant will be necessary in roughly ten years due to increased demand for MCWA water. Provided the Lake Water Supply Project is built, the water treatment plant can be constructed for a cost of \$26 million. Costs would be greater in the absence of the Project. An expenditure of \$26 million for the treatment plant will result in a one-time increase in output of about \$29 million, employment of 440 and employee compensation of nearly \$14 million.

**Economic Impact of Operation**

***Background Assumptions***

Xerox Corporation needs 18,000 tons of cooling, a share of which will be used for process cooling. Phase One will generate a total of 20,400 tons of cooling thus leaving 2,400 tons of cooling for other businesses. O’Brien & Gere estimates that one ton of cooling can cool 440 square feet of building space, thus just over one million square feet of non-Xerox building space can be cooled after project completion. Following Phase Two, a total of 30,600 tons of cooling will be available. Combining phases one and two, the capacity not used by Xerox Corporation will total 12,600 tons, enough capacity to cool 5,544,000 square feet of building space.

For analytical purposes, CGR assumes that all of the businesses added to the industrial zone will be new to the



RMSA, not simply relocations from another area within the RMSA. Of course, as some relocation is inevitable, our findings should be viewed as “upper bound” estimates. Finally, we explored different assumptions about system usage by owners of existing structures not occupied by Xerox—consisting of just under one million square feet. We expect that few of these building owners will take immediate advantage of the excess system capacity, as the capital costs involved in tying into the new system are significant *unless* the business already must replace installed chilling equipment. Over time, established business firms may wish to join the cooling district as existing equipment needs to be replaced.

CGR examined four types of uses for additional building workspace to be added to the industrial zone. The industrial categories examined involved warehouse, light industrial, research and development (R&D) and office uses of the buildings. As our analysis employs the IMPLAN regional input-output model of the regional economy, it was necessary to select specific industries for our analysis. The *Wholesale Trade* sector (IMPLAN industry 447) was employed to model the “warehouse” land use. “Light industrial” is modeled by use of the *Machine Tool and Metal Cutting* industry (IMPLAN industry 318). *Research and Development, including Testing Services* (IMPLAN industry 509) was used for “R&D.” “Office” use was modeled with *Accounting, Auditing & Bookkeeping* (IMPLAN industry 507).

A survey commissioned by the Urban Land Institute in the 1980s reports the average workplace density for each industrial category.\*\* Using these averages, CGR estimated the number of workers that would be employed on site for each potential land use. Of course, actual occupants of new space built on the site would adopt their own approach to space utilization and will undoubtedly employ more or fewer workers than the average.

Using IMPLAN, these densities enabled CGR to estimate the total output of the hypothetical firms locating in the cooling district and to estimate the economic impact of purchases made by the company as well as the economic impact of employee spending. Total output and employment estimates in what follows includes the direct effect (from on-site businesses), the indirect effect (stimulated by the purchases of the site businesses in the

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\*\*CGR verified these density statistics against a more recent source, a survey of energy usage by detailed industry from the U.S. Environmental Protection Agency. While only available for manufacturing firms, the EPA survey confirmed that the Urban Land Institute figures are still current.

community) and the induced effect (resulting from additional spending by residents drawn to the region by the new development).

The findings in this report depend heavily on these assumptions. The actual impact of the project on the community will depend on the proportion of cooling capacity absorbed by existing buildings in the cooling district, the proportion of business firms re-locating to the site from another location in Monroe County and the actual build-out of the zone, both in terms of density and industrial composition. As reflected in the numbers presented below, for example, a chilled warehouse, while a logical use of inexpensive chilling for the business firm, would confer a much smaller benefit on the community than would an office development of similar scale.

CGR analyzed several scenarios relating to the demand for cooling by current businesses in the industrial zone. Our findings are summarized below.

### *Phase I*

CGR first estimated the impact for each category assuming that no existing businesses other than Xerox Corporation would sign up for service. This implies that the 2,400 tons available in phase one will be used by new businesses added to the RMSA, enabling just over one million square feet of additional cooled space. The economic impact, composed of the direct effect plus the corresponding indirect and induced effects resulting from the cycle of spending and re-spending, is shown in the table below. Alternative industrial configurations are listed in order of increasing employee compensation.

<b>Phase I: All available cooling awarded to new businesses</b>				
<b>Industry Mix</b>	<b>Warehouse</b>	<b>Light Industrial</b>	<b>R&amp;D</b>	<b>Office</b>
<i>All Warehouse</i>	100%	0%	0%	0%
<i>All R&amp;D</i>	0%	0%	100%	0%
<i>Industry Mix 1</i>	25%	25%	25%	25%
<i>Industry Mix 2</i>	10%	20%	30%	40%
<i>All Light Industrial</i>	0%	100%	0%	0%
<i>All Office</i>	0%	0%	0%	100%
<b>Economic Impact</b>	<b>Direct Employees</b>	<b>Total Output</b>	<b>Total Employment</b>	<b>Employee Compensation</b>
<i>All Warehouse</i>	380	\$ 66,712,322	753	\$ 23,152,167
<i>All R&amp;D</i>	2,175	\$ 176,390,896	3,334	\$ 67,625,770
<i>Industry Mix 1</i>	1,824	\$ 232,055,424	3,251	\$ 85,168,165
<i>Industry Mix 2</i>	2,247	\$ 277,880,884	4,012	\$ 98,648,485
<i>All Light Industrial</i>	1,700	\$ 278,775,045	3,150	\$ 119,561,763
<i>All Office</i>	3,041	\$ 406,343,435	5,766	\$ 130,332,961
<i>"Total Employment" includes direct employees.</i>				

In this instance (as in all others), the higher densities involved in office development suggest that the greatest benefit of the cooling capacity would be realized if all capacity were devoted to office development. Almost 6,000 jobs and \$130 million in payroll would be stimulated by such development. At the other extreme, a warehouse/distribution use would create only 750 jobs and \$23 million in payroll.

CGR also estimated the impact assuming that half of the current customers other than Xerox Corporation would sign up for service. Based on the previously discussed assumptions, this implies that 1,031 tons of cooling will be required for current businesses leaving almost 1,369 tons of cooling for new customers. Thus, just over 602,332 square feet of building space would be occupied by businesses new to the area. The results from this assumption are shown in the table below. Alternative industrial configurations are listed in order of increasing employee compensation.

<b>Phase I: Half of existing building space included in cooling district</b>				
<b>Industry Mix</b>	<b>Warehouse</b>	<b>Light Industrial</b>	<b>R&amp;D</b>	<b>Office</b>
All Warehouse	100%	0%	0%	0%
All R&D	0%	0%	100%	0%
Industry Mix 1	25%	25%	25%	25%
Industry Mix 2	10%	20%	30%	40%
All Light Industrial	0%	100%	0%	0%
All Office	0%	0%	0%	100%

<b>Economic Impact</b>	<b>Direct Employees</b>	<b>Output</b>	<b>Total Employment</b>	<b>Employee Compensation</b>
All Warehouse	217	\$ 38,052,051	430	\$ 13,205,768
All R&D	1,241	\$ 100,611,630	1,902	\$ 38,573,073
Industry Mix 1	1,041	\$ 132,362,129	1,854	\$ 48,579,083
Industry Mix 2	1,282	\$ 158,500,520	2,288	\$ 56,268,124
All Light Industrial	970	\$ 159,010,540	1,797	\$ 68,196,852
All Office	1,735	\$ 231,774,293	3,289	\$ 74,340,637

Peak economic impact in this instance would be achieved if all additional capacity were devoted to office development. The total impact would involve about 3,300 workers earning about \$75 million in payroll.

Obviously, if all current property owners were to join the cooling district, the capacity of Phase I would be largely exhausted and little new construction would benefit from the project. We do not mean to imply that the benefit would be inconsequential, however. The Cooling Project's principal aim in Phase 1 is the *retention* of existing jobs.

Employment at the Xerox Webster facility is approximately 7,800. The impact of these jobs on the community at large is substantial as these workers are well-paid compared to workers in the service sector or other manufacturing industries. CGR estimates the total employee compensation to be approximately \$640 million for both on-site and off-site employment. Off-site employment is estimated at 8,500.

## *Phase II*

After the implementation of phase two, a total of 30,600 tons of cooling will be available. Thus 10,200 tons of new cooling will be available in phase two. This translates into the ability to cool an additional 4,488,000 square feet of building space. The total effects can be calculated by adding the results from phase two to each of the results from phase one independently. The Phase II results follow.

<b>Phase II (all new businesses)</b>				
<b>Industry Mix</b>	<b>Warehouse</b>	<b>Light Industrial</b>	<b>R&amp;D</b>	<b>Office</b>
<i>All Warehouse</i>	100%	0%	0%	0%
<i>All R&amp;D</i>	0%	0%	100%	0%
<i>Industry Mix 1</i>	25%	25%	25%	25%
<i>Industry Mix 2</i>	10%	20%	30%	40%
<i>All Light Industrial</i>	0%	100%	0%	0%
<i>All Office</i>	0%	0%	0%	100%
<b>Economic Impact</b>	<b>Direct Employees</b>	<b>Output</b>	<b>Total Employment</b>	<b>Employee Compensation</b>
<i>All Warehouse</i>	1,616	\$ 283,527,367	3,201	\$ 98,396,708
<i>All R&amp;D</i>	9,245	\$ 749,661,310	14,168	\$ 287,409,524
<i>Industry Mix 1</i>	7,753	\$ 986,235,554	13,815	\$ 361,964,702
<i>Industry Mix 2</i>	9,550	\$ 1,180,993,757	17,050	\$ 419,256,060
<i>All Light Industrial</i>	7,226	\$ 1,184,793,942	13,387	\$ 508,137,493
<i>All Office</i>	12,925	\$ 1,726,959,597	24,505	\$ 553,915,084

As can be seen from the table, new construction on this scale would have a significant impact on the regional economy. CGR estimates current payroll in the RMSA at about \$16 billion. If built solely as office space, the total impact of this industrial zone—both on site and off site—would be an additional half of a billion dollars in payroll and an increase in aggregate employment of just under 25,000, almost five percent of current total employment in the region.

## *Fiscal Impacts*

Sales tax impacts from the project would be significant. Using statistics compiled by the NYS Department of Taxation and Finance’s Office of Tax Policy Analysis, CGR calculated

that aggregate sales tax revenue totals about three percent of local personal income. An increase in payroll of \$500 million would stimulate increased sales tax revenue of about \$15 million, half of which would stay in the community and half of which would flow to the State of New York.

About \$20 million in sales tax revenue is also generated from the spending of current Xerox workers plus the off-site payroll stimulated by the Xerox workers.

Personal income tax receipts would also increase as a result of the project. The Office of Tax Policy Analysis reports that Monroe County residents with “NYS adjusted gross income” between \$20,000 and \$29,999 paid 3.4 percent of income as tax, after deductions, exemptions and credits in 1995. County residents with income between \$30,000 and \$39,999 paid 4.2% of income as tax, after deductions, exemptions and credits. The income of workers at the Webster site is unknown, but an average salary in this range is not implausible. If average payroll was midway between these two income ranges, the State of New York could expect annual personal income tax receipts of about \$19 million from \$500 million in new payroll.

Jobs retained at Xerox by this project likely generate personal income tax revenue of about \$27 million. If the corporate franchise tax and subsidiary capital tax liability for the Instruments and Related Products industry for 1995 were allocated in proportion to employment, Xerox’s obligation for its Webster site would total about \$3.2 million.\*

## **Conclusion**

The benefit of the cooling project described above could be very significant for the Town and Village of Webster, Monroe County and the State of New York. The aggregate annual impact on the community of the two project phases could reach 30,000 jobs and almost \$700 million in payroll. The State of New York would receive additional personal income tax

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\*The Office of Tax Policy Analysis of the NYS Department of Taxation and Finance reports Corporate Franchise Tax liability according to SIC code (the latest year available being 1995). Actual liability for an individual plant site is impossible to determine. Liability for an individual firm is only revealed in confidential records. CGR’s approach enables an “order of magnitude” reckoning of likely tax payments by firms in particular industries.



revenue of about \$25 million and sales tax revenue of \$10 million. Monroe County would receive an additional \$10 million in sales tax revenue as well.

The construction phase (of the chilling facility alone, in its two phases) is likely to add a one-time stimulus of over 2,300 jobs and more than \$70 million in payroll. This would lead to an increase in income tax receipts of about \$3 million and sale tax receipts (split between the state and the county) of an additional \$2 million.