

ENERGY ISSUES OF NEW YORK'S FOREST PRODUCTS INDUSTRY

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INTRODUCTION

New York is blessed with a large and high quality timber resource. As a result, it has historically been one of the largest producers of forest products in North America. Unfortunately, due to a variety of reasons, the New York forest products industry has suffered substantial reductions over the past 40 years. For example, in 1957 New York had 101 pulp and paper mills operating. Today, only 40 are in operation. Much of the current pulp and paper production capacity has moved to the southeast United States. This area has the largest, most modern mills in North America, while New York's existing mills are generally old and small. In addition, virtually all recent expansion in the forest products industry has been outside New York, primarily in the southeast.

While there are clearly numerous and complex factors influencing a company's decision to relocate to, or expand in, a specific area, anecdotal evidence exists indicating that energy costs play a primary role in these decisions. Other factors believed to affect these decisions include environmental regulations, taxes, labor costs, and a myriad of political and economic factors that collectively create what has been referred to as the "business climate." This anecdotal evidence is supported by the fact that New York has relatively high energy costs, taxes and labor costs, stringent environmental regulations, and what is perceived as an unfriendly business climate. In contrast, the southeast enjoys relatively inexpensive energy, taxes and labor costs, and a friendly business climate. This study¹ was completed to gather primary data to confirm or refute the anecdotal evidence, and attempt to better understand how forest product companies make location and other strategic decisions. In addition, a primary goal of the study was to identify potential actions New York could take to improve its attractiveness to forest product companies considering relocating or expanding.

Specific objectives of the study include:

Identifying the importance of energy costs to strategic competitive decisions of forest product firms (particularly in terms of relocating or expanding).

Identifying the costs of energy to New York forest product firms as compared to energy costs in other states with a large presence of forest product companies.

Identifying how forest product companies currently use energy, including typical fuels, consumption levels, and energy using equipment.

Ranking energy costs, along with other factors of production, in terms of their strategic importance to forest product companies.

Identifying cost-effective energy efficiency measures that can be implemented by forest product industries.

Identifying the existing barriers to implementation of energy efficiency measures.

¹In conjunction with the New York State Department of Economic Development and the Forest Products Council, the New York State Energy Office with the assistance of a retained consultant (Xenergy) undertook this study to assess the energy and economic issues facing the forest products industry in New York.

Identifying any programs or services currently available to forest product companies by their utilities.

Identifying non-energy related factors affecting strategic competitive decisions by forest product companies in New York and other states.

Assessing potential opportunities for New York State to improve the competitive climate for the forest products industry and ensure retention and expansion of existing operations within the state.

It is hoped that the Forest Products Council will be able to use the information gleaned from this report to develop state initiatives to promote the expansion and retention of the forest products industry in New York.

SUMMARY OF APPROACH

A variety of methods were used to complete the Forest Products Industry study. First, a literature search was conducted to identify any findings from related studies. The literature search included reports pertaining to the forest products industry in New York and other areas, as well as literature about strategic business planning decisions and economic and business development issues in New York and competing forest product areas.

In addition to the general literature search, nine detailed engineering studies previously conducted for forest product companies were reviewed. This data provided technical information on how forest product companies currently use energy, their level of energy consumption, existing energy using equipment, and cost-effective efficiency opportunities.

To obtain primary data from New York forest product companies, a series of three focus groups were held. One each for: pulp and paper mills, sawmills, and secondary product manufacturers (e.g., furniture manufacturers, carvers, mill workers, finished goods, etc.). These focus groups allowed first-hand feedback from forest product companies about their decision making, energy usage, and perceptions of the energy, environmental and business climate in New York. While useful information was obtained, the sizes of focus groups were small (five, two and two, respectively). As a result, to improve the level of information obtained, separate phone surveys and in-person interviews were conducted (15 total). These surveys included all three categories of forest product company, as well as a representative from a national trade association. In addition, the phone surveys covered forest product companies from all regions of the state.

Finally, data was collected on energy costs and utility incentives and programs. Energy cost data was collected from a variety of sources, including the Energy Information Administration, the Edison Electric Institute, and individual utilities. Information on utility incentives and programs targeted to the forest products industry was obtained from a phone survey of the major utilities serving states (and Canada) with a high concentration of forest product companies.

OVERVIEW OF NATIONAL AND NEW YORK INDUSTRY TRENDS

Economic Impact

- * Nationally, the industry directly employs 1.4 million people, and is among the top 10 employers in 46 states. National annual labor costs are \$46 billion.
- * The industry represents over 7% of total U.S. manufacturing output.
- * Ninety three percent of pulp and paper mills increased production capacity over the past decade. This trend was most predominant among the largest mills, and geographically in the south, northwest and midwest.

- * Alabama has only 16 mills, but approximately 8% of national production. The southeast has 144 mills, 28% of the national total, yet accounts for 58% of national production. The largest, modern mills are in the southeast, while New York has many small, old mills (average capacity 132 tons/day).
- * New York has 40 pulp and paper mills, approximately 10% of the national total, but only approximately 2% of the national pulp and paper production.
- * Capital spending in New York has been very limited over the past two decades, despite substantial industry growth throughout the continent.
- * Over the past decade, logging employment in New York has increased 30%, yet the number of sawmills have decreased, as has their average capacity. This means more logs are going out of state for processing. In addition, decreases have occurred in virtually all categories of secondary wood product manufacturing.
- * Over 80% of the native hardwood species used by existing secondary manufacturers in New York's North Country are purchased from outside the region. This is a result of the limited sawmill capacity.

Energy Usage and Cost

Trends in the industry from 1974 to 1988 include:

- * Production in paper and related products increased by 35.8%.
- * Purchased energy consumption decreased 10.5%.
- * Fuel oil consumption decreased by 58%.
- * Percent of energy input from wood by-products increased from 39.7% (1972) to 55.5% (1988). Increases have continued into the 1990's and are estimated to be around 60% now.
- * Alternative fuels furnish 56% of industry's energy needs. This is primarily electric generation from the combustion of wood by-products. Industry cogeneration saves 24 million barrels of oil equivalent per year.
- * The cost of purchased energy for the pulp and paper industry went from 6.9% of total product value in 1972 to 8.4% in 1992, while peaking at 13.9% in 1982. While the trend is currently going down, it is still very substantial. For example, a 25% increase in energy efficiency (or reduction in energy cost) would translate into a 2.1% increase in gross profit.
- * Nationally, modern pulp mills generate excess electricity of about 350 kWh per ton of pulp. This is predicted to climb to 1200 kWh/ton when black liquor gasification becomes viable.

Recycling

- * While virgin pulp processing capacity is declining, recycling capacity is growing. For example, recycling capacity has increased by nearly 230,000 tons/year at four mills in New York State since 1992. This represents a 26% increase over the 867,000 tons of recovered paper consumed in New York in 1992. By comparison, recovered paper consumption on a national level is expected to increase 30% between 1992 and 1996. Recycling capacity in New York could grow even more significantly, if some of the projects currently in the planning stages reach fruition.
- * The recycling process is less energy intensive than virgin production. However, it requires significantly more purchased energy, particularly electricity. As a result, New York is at an even greater disadvantage compared to other areas because of its relatively high electric rates.

- * Given that much of the future growth will be in recycling, and particularly near large population centers, reducing electricity costs in New York will be critical to attracting this expansion.

Energy Costs and Incentive Programs

The following highlights data showing industrial energy costs for New York and selected states that compete in the forest product industry with New York:

- * Of the ten states studied, plus Canada, New York has the highest average industrial electric rate, at 7.32 cents per kWh.
- * New York's electric rate is 42% higher than the national average, 39% higher than the average of all other states analyzed, and 57% higher than the southern states analyzed.
- * New York's average industrial natural gas rate (\$5.17/CCF) is the highest of the ten states analyzed.
- * Natural gas in New York is approximately 70% higher than the national average, 46% higher than all other states analyzed, and 53% higher than the southern states analyzed.

INDUSTRY SURVEY RESULTS AND OTHER MARKET RESEARCH

This section presents the key findings from three focus groups (one each for pulp and paper mills, sawmills, and secondary products), phone surveys, and a review of secondary market research. First, general findings are presented, followed by industry specific results. Informal discussions with other industry representatives also provided valuable information.

Overall, the research indicates New York has some major advantages, including a high quality resource base, a well skilled labor force and good work ethic, a good transportation infrastructure, and good availability of water and electric power. However, these are generally becoming less important, especially as recycling becomes more prevalent and other states provide labor training programs. The major drawbacks seem to be high energy costs, complicated and onerous environmental regulations, and high workers' compensation rates.

All but one respondent viewed energy costs as prohibitive to business expansion. The one respondent who did not view energy costs as prohibitive purchases low cost municipal power. Electricity was the only energy source of concern by any respondents.

- * Sixty four percent of respondents ranked energy costs as the primary factor affecting competitiveness.
- * Thirty six percent ranked energy costs as secondary to either labor costs, raw materials availability, or taxes.
- * Fifty percent stated energy costs are significant to their strategic planning
- * Fourteen percent have explicit policies for future expansion to take place out of state, in an area of lower energy costs.

The most popular solution to energy cost problems was increased retail electricity competition, proposed by 71% of respondents. Respondents also recommended rate subsidies for small business, tax relief, reductions in workers' compensation rates, low interest financing, and technical assistance.

Pulp and Paper Mills

A national survey of pulp and paper mills by TAPPI found that 83% consider energy issues to be more important today than in 1984. Those that said energy use was less important were all large mills (> 100,000 tons/yr.). Sixty percent of mills have increased on-site generation since 1984. Fifty percent of mills currently plan to increase self generation.

Quebec saw a major loss of jobs and mills in the 1989-1992 economic downturn. The consensus is that New York mills barely survived and will likely follow suit at the next economic downturn.

Issues identified at the focus group as affecting a mill's competitive position and influencing location decisions include:

- Energy costs
- Access to raw materials (transportation costs)
- Environmental Regulations (particularly the Clean Air Act and land fill regulations)
- Trained labor
- Overall business climate and level of state support
- Level of bureaucracy (e.g., the government regulators hinder deals with utilities.); and
- Utility regulations and energy taxes.

Of the above issues, energy costs and environmental regulations were tied as the most critical. Access to raw materials was ranked second. All the other issues were considered of secondary importance.

Power quality is very important -- particularly reliability. One firm mentioned they are the largest single point user of electricity for their investor-owned utility, yet they are frustrated because the utility does not treat them as important.

The age and small size of mills in New York compounds the energy cost problem. It is very difficult for these mills to compete with new, large mills in the south on commodity products. The survival of New York mills is based on an ability to produce specialty grades. However, two thirds of the New York capacity is currently in commodity grades. (As much as 85% in the North Country.)

Rather than upgrade an old, small machine in New York, a national firm is likely to expand elsewhere, given the energy and regulatory drawbacks of New York.

There is a window of opportunity for the state to get positively involved and find helpful and creative solutions. This issue was reiterated both in focus groups and with individual discussions. There is a sentiment that for any state program to be effective, it must get started soon, and be in place by about 1997 to capture the next major round of capital investment. Without a well thought out strategy, New York mills will likely close down.

Sawmills

The most common complaints heard from the sawmill industry include:

- Logs are leaving the state for milling.
- Sawmills must be power generators to be competitive.
- Regulation is burdensome.
- Workers compensation is too high.
- Business climate in New York is hostile.
- Property taxes are too high.
- Energy costs are too high (particularly electricity).

A ranking of the above issues in order of importance for competitive success are:

1. Energy costs and taxes (tie)
3. Regulation (particularly environmental)
4. Workers compensation

* Many of the North Country sawmills are very small, and are on residential electric rates. Many have been forced into the power generation business due to the high cost of this electricity.

- * Canada is a major area of competition for sawmills. There is a perception that Canadian firms are being subsidized.
- * Loggers in New York are doing well. However, much of the resource is going outside the State in raw form. New York is losing the value added industry. In fact, secondary product manufacturers often must import finished hardwoods back into the state.
- * Hardwood kiln drying is a major energy consuming process. Electrotechnologies are available (microwaves, radio frequency, sonic, and vacuum), however, small firms do not have technical expertise or capital for these retrofits.

Secondary Products

Issues identified by secondary firms (including furniture makers, carvers, mill work, and makers of packaging material and finished goods) as important for competitive success, are prioritized as follows:

- Electricity costs
- Labor issues
- Environmental regulations (particularly the Clean Air and Water Acts)
- Landfill costs
- Raw materials
- Transportation costs

Power quality is not a concern, implying these firms might trade off some quality (i.e., reliability) in exchange for a lower rate.

In general, the less control a firm has over a factor of production, the more likely they are to feel it is a barrier to success. Firms generally felt powerless to control energy and insurance costs.

Because of the high quality of hard woods in New York, competition from outside the region is minimal. Most secondary product firms compete on an intra-state basis. This is not true, however, for lower grade products, and finishing processes.

A majority of firms have participated in some sort of utility demand side management (DSM) program. Typically these include lighting and motors programs. Most firms believe that they have done virtually all cost-effective measures available to them. Therefore, they perceive energy prices as the major hurdle to overcome, not inefficiency.

Cost-Effective Measures

Based on a review of detailed engineering studies completed for nine forest products industries by the New York State Energy Office and on available literature, the following measures appear to be cost-effective efficiency improvements for the forest product industry in New York:

- Waste heat recovery (primarily pulp and paper mills);
- Self-generation (particularly cogeneration);
- Variable speed drives on process motors (savings limited for secondary products);
- High efficiency process motors (the saturation of this measure is already very high);
- Upgrading or replacing recovery boiler (primarily pulp and paper mills);
- High efficiency lighting;
- Power factor correction; and
- Electrotechnologies for drying (paper and sawmills only).

Variable speed drives, lighting, high efficiency motors and sometimes heat recovery tend to have relatively fast paybacks (under four years). The other measures tend to have longer paybacks, but can also offer the greatest absolute savings. This is particularly true of self-generation.

Several of the larger mills feel that energy efficiency is not much of a concern, because they have already implemented measures. Although they stress the problem is energy prices, it is important to note that the on-site engineering assessments identified additional cost-effective energy efficiency improvements of over \$5 million annually at the nine studied firms.

Energy issues are becoming more and more linked to environmental and economic development issues, to the point where it is often hard to tell them apart. For example, waste water treatment facilities are one of the most energy intensive operations associated with the paper products manufacturing plants.

POTENTIAL ACTIONS

Energy Prices

A strategic action plan for the Forest Products Industry should be developed and implemented incorporating the following energy-related recommendations:

- * The large companies indicated that their main concern was *energy price*. Primary desires are for the State to relax utility regulation to allow them greater ability to negotiate electric rates, and to foster retail wheeling. As of mid-1994, utilities in New York are allowed to offer flexible rates to large customers with competitive options. One company suggested that the State act as a mediator between utilities and companies to negotiate lower rates.
- * Reductions in energy taxes, such as reductions in the utility gross receipt tax on the sales of electricity and natural gas.
- * Encourage greater reliance of competitive markets to control electricity costs, as well as support the expanded use of flexible, competitive rates for distressed business, such as those in the forest products industry.
- * Leverage plant investment by offering energy rate discounts. This would be similar to utility economic development rates, i.e., if a plant purchases new machines, invests in energy efficiency, etc., they become eligible for a discounted rate for a certain period of time.
- * Examine the feasibility of giving a higher priority of providing economic development power to forest products industries as an incentive to expand and locate in New York.
- * Incorporating as a municipality offers an opportunity for entities in New York to purchase inexpensive power on the competitive wholesale market. One firm actually relocated 13 miles away simply to be eligible to purchase municipal power. A program to work with the industry to develop "enterprise zones" that are municipalized could be effective in ensuring lower cost power.
- * Investigate the feasibility and implications of targeted energy cost subsidies. (A potential barrier to any direct State energy cost subsidies or services, however, is the North American Free Trade Agreement. State aid may be viewed as unfair competition with Canada.)

Technical and Financial Assistance

A network of energy related assistance and services, from analyzing utility bills to identifying process improvements, is needed for the forest products industry. The strategic action plan should be developed and implemented with the following package of comprehensive technical and financial assistance recommendations:

- * Expand services focusing on medium and small firms (particularly sawmills and secondary products) that emphasize technical assistance and low cost financing. For example, assistance to help sawmills

incorporate electrotechnologies for kiln drying could be a valuable service. Also, technical assistance in developing more efficient self generation is needed by small sawmills. Assistance, ensuring that firms obtain the most favorable rate from their utility, may be critical for the smallest firms.

- * For larger firms, any technical assistance or energy efficiency services may have to be combined with a rate reduction or partial subsidy for installation of efficient equipment to make a significant difference. One firm mentioned they needed a 33% reduction in their energy bills by 1998 to survive.
- * Seek out and secure new and additional sources of capital to supplement existing sources from the State to fund energy efficiency measures that reduce operating costs and improve the competitiveness of the forest products industry in the State.
- * While there is some interest in third-party energy services, a major barrier is that firms are unwilling to have any liability accrue to their balance sheet for energy projects. Thus, the third-party would have to absorb all the risk. A State program to provide performance or financing guarantees might help.
- * Interest by both large and small firms was expressed for the State to act more aggressively as a clearinghouse and coordinator of various services. This might range from assistance in negotiating utility rates and assisting in the development of a shared savings energy service contract, to taking advantage of existing State or utility programs.
- * Developing programs or services that more effectively stresses the other associated benefits resulting from energy efficiency improvements (i.e., increased productivity, improved product quality, increased customer satisfaction, etc.) may be the key to overcoming the lack of capital barrier. Companies will generally invest in measures that they see as improving their product or market share (i.e., microwave drying, high efficiency pressing, etc.), but not in cost saving measures (i.e., lighting energy efficiency).

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