The Economic Opportunities for a Limited Industrial Retail Choice Plan In Louisiana

David E. Dismukes
Elizabeth A. Downer
Dmitry V. Mesyanzhinov

Louisiana State University
Center for Energy Studies
Baton Rouge, LA

August 25, 2004

Table of Contents

EXECUTIVE SUMMARY i

ACKNOWLEDGEMENTS iii

SECTION 1: INTRODUCTION 1

SECTION 2: THE IMPORTANCE OF ELECTRICITY TO LOUISIANA INDUSTRY 4
2.1 Overview of Louisiana's Industrial Power Markets 4
2.2 Louisiana's Industrial Electricity Rates, Expenditures, and Competitiveness 5
2.3 Industrial Customers' Perceived Opportunities in Competitive Markets . 8

SECTION 3: APPROACH AND METHODS 11
3.1 Introduction 11
3.2 Definition of Eligible Customers 11
3.3 Definition of Baseline Level of Rates 13
3.4 Definition of Potential Sources for Savings 14
3.5 Scenario Development 16

SECTION 4: EMPIRICAL RESULTS 17
4.1 Analysis of Eligible Customers 17
4.2 Analysis of Estimated Savings 17
4.3 Analysis of Estimated Economic Impacts 22

SECTION 5: CONCLUSIONS 24
5.1 Analysis of Competitive Sales Leaving the Utility System 24
5.2 Other Factors For Consideration In Offering Large Industrials the Opportunity for Choice 25

EXECUTIVE SUMMARY

Since 1998, Louisiana has lost 29,200 manufacturing jobs. Some 14 percent of these job losses (4,100) have been in the chemical industry alone. Over the past 24 months, an additional 3,500 layoffs have been announced.

A challenge for Louisiana industry continues to be how it can remain globally competitive in light of rising energy costs. A significant economic development policy challenge over the next several years will be to quickly eliminate barriers to low cost energy resources for the state's manufacturing base. In addition to high natural gas prices, Louisiana industry is currently paying the highest industrial electricity rates in the Southeast according to the U.S. Department of Energy.

One means to reduce pressure on Louisiana industry could be through the adoption of a limited retail choice plan for large users of electricity. A plan of this nature was proposed by the Louisiana Public Service Commission Staff ("LPSC Staff") in July 2001. Under such a plan, large industrial customers with loads greater than 5 megawatts ("MW") would be allowed to choose their own provider of electricity under certain provisions. The purpose of this study has been to provide some empirical estimates of the amount of savings, and economic impacts that could result from implementation of the LPSC Staff Plan.

The study modeled a number of different scenarios under which a limited industrial choice plan may be developed. A range of savings were developed under a range of potential market outcomes. One approach, called the average savings approach, assumed that industrial customers opting to leave the utility system would achieve savings similar, in percentage terms, to those in states that have allowed retail choice. The second approach, referred to as the fixed heat rate approach, examined the savings to industrial customers under a fixed 8,000 heat rate contract.

The study finds:

- Under a average savings approach,
    - savings for industrial customers could range from as high as $84 million to $212 million per year;
    - The net economic impacts to the Louisiana economy (adjusting for out-of-state leakages) could range from $55 million to $118 million per year.
    - The employment created from an industrial choice plan ranges from a high of 454 jobs to a low of 202 jobs.

- Under a fixed heat rate approach,

    - savings for industrial customers could range from as high as $69 million to $130 million per year;

    - The net economic impacts to the Louisiana economy (adjusting for out-of-state leakages) could range from $47 million to $76 million per year.

    - The employment created from an industrial choice plan ranges from a high of 292 jobs to a low of 173 jobs.

While adopting a limited industrial retail choice plan sounds appealing, it does have a number of admitted challenges. The largest being how a plan of this nature could be implemented without negatively impacting other smaller customer class (like residential and small commercial customers) that would remain under the protection of regulation.

The concern is based upon the fear that a large shift of sales associated with departing industrial customers could leave the remaining residential and small commercial customers with a considerable amount of costs to recover. However, consider that:

- The amount of sales that appear to be at risk from leaving the utility system are smaller than the generation resource requirements that some utilities have over the next several years. Entergy, for instance, has noted that they will need close to 4,800 megawatts ("MWs") of new generation resources over the next several years: an amount considerably higher than the industrial load eligible to leave the system.

- Louisiana has already experienced a considerable deterioration of industrial sales, for a variety of reasons, since 1996. The 5.4 million MWhs in industrial sales that have been lost to date are greater than the most conservative estimate of industrial sales departing for competition in this study. These historic sales losses range from half, to a third, of the more moderate and aggressive choice scenarios estimated in this study, respectively. Thus, sales losses are already occurring, and while the loss of industrial customers could have some short run rate implications, these losses may be preferable to the long run contraction of industry (and manufacturing employment) in Louisiana.

ACKNOWLEDGEMENTS

The initial interest associated with this report began in the summer of 2003: a time in which a large number of Louisiana's industrial customers were continuing to suffer from the pressures of a prolonged national downturn in industrial production, high natural gas prices, and global competition. A group of these industrial customers, after consulting with each LPSC Commissioner, approached the Center for Energy Studies ("CES") to conduct an independent examination of the potential savings and economic impacts of the "Staff Plan" proposed in July, 2001. These customers agreed to provide financial support for the study, and while they have offered suggestions about the project's original work plan and scope, neither they, nor the LPSC, have had any involvement in the development of the study approach or results.

All major stakeholder groups were briefed about the study and its results prior to final release. These stakeholders included the LPSC Commissioners, the LPSC Technical Staff, industrial users, several representatives from state agencies, independent power developers, investor-owned utilities, rural cooperatives, and the Office of the Governor. The fact that these briefings occurred should not be construed as any acceptance or rejection of the study by any stakeholder group, but was simply an initiative to inform all parties about the study and its conclusions.

SECTION 1: INTRODUCTION

Repeated studies and practical experience confirm the importance of low cost, reliable supplies of energy for economic development. More developed economies require greater amounts of energy to power homes, businesses, and industries. Even in developed countries like the U.S., many industrial location decisions are based upon access to reliable and low cost sources of energy.

While Louisiana is a major energy producer, it is also a considerable energy user. Louisiana ranks in the top ten states in both natural gas and electricity consumption. When prices for both of these energy commodities increase, industries suffer. Over the past 3 years, increases in natural gas prices have highlighted our manufacturing industries' vulnerability to volatile energy costs.

Louisiana's industrial and manufacturing sector, once over 185,000 jobs strong, is now 84 percent of its 1998 level. In other words, as seen in Schedule 1, since 1998, the state has lost an estimated 29,200 high paying manufacturing jobs. While the state has experienced considerable growth in the construction, service, and government sectors over a comparable period, these industries pay, on average, over 30 percent lower than traditional manufacturing jobs.

Some 14 percent of these job losses (4,100 jobs) have been in the chemical industry alone. These losses represent almost 17 percent of the chemical industry's existing employment level. Despite high oil prices, petroleum refining has also seen the loss of almost 1,000 jobs since 1998. The paper and pulp industry, the third most intense user of energy in the Louisiana manufacturing economy, has lost some 1,300 jobs over a comparable period.

Given the current mobility of industry, both regionally and globally, it should come as no surprise that if Louisiana's industries cannot realize lower cost energy resources here, they are likely to shut down (or curtail operations) and seek these resources opportunities elsewhere. The business headlines in the State's major newspapers over the past 24 months confirm this reality. Schedule 2 summarizes the major layoff, closure, and job loss announcements over the past 2 years. To date, these announcements anticipate the loss, or out-of-state relocation, of some 3,500 jobs.

Perhaps one of the more sobering statistics regarding recent Louisiana manufacturing performance comes from examining the historic trends in gross state product ("GSP") over the past 25 years in constant dollars. This graph of GSP, as shown in Schedule 3, is a measure of the state's annual output and production that has been adjusted for inflation, and is currently at one of its lowest levels in recent Louisiana history. The only period lower was in the early 1980s (1982 through 1986) following one of the most painful post-WWII recessions in U.S. history.

An important economic development policy challenge over the next several years will be to quickly eliminate barriers to lower cost energy resources for the State's manufacturing base. Louisiana has already made significant strides in the recent promotion of liquefied natural gas facilities ("LNG") in Louisiana and the Gulf of Mexico region. The State is also working with industry to streamline the process of permitting exploration and production ("E&P") activities to bring additional energy resources on-line more quickly. Another policy tool that could be utilized to provide some relief for the state's large industries would be to allow these companies to choose their own provider of electricity.

In its most recent *Eight Point Plan*, the Louisiana Chemical Industry ("LCA") and the Louisiana Chemical Industry Alliance ("LCIA") encourage the state to promote policies that allow the chemical industry to remain strong in a global market.[1] One of the suggestions offered by LCA/LCIA was to "allow large users the ability to choose their own energy providers." Louisiana allows large users to choose their own natural gas provider, but does not allow industrial customers to choose their own provider of electricity.

In July 2001, the Staff of the Louisiana Public Service Commission ("LPSC") explored the possibility of offering large industrial customers the opportunity to choose their own competitive sources of electricity. Under this proposal, hereafter referred to as the "Staff Plan," industrial customers with loads greater than 5 megawatts ("MWs") would be allowed to choose their own competitive provider of electricity. With this opportunity, however, would come a number of restrictions and responsibilities.[2] These include:

(1) Industrial customers would be responsible for their share of the host utilities' "stranded costs" through a non-bypassable charge assessed to their wires bill.

(2) Industrial customers would be allowed only one opportunity every 2 years to exercise their option to choose a competitive electricity provider. The industrial customer would have to give the utility a six month advance notice that it was going to exercise its option to choose.

---

[1]The LCA/LCIA *Eight Point Plan* is an economic development document that offers a number of policy recommendations with the goal of developing a "predictable business environment that reduces investment risk and is conducive to business retention and the creation and growth of innovative chemical companies."

[2]The Staff Plan should not be confused with the unfettered retail choice plans adopted in several states across the U.S. over the past several years. The plan proposed by the LPSC Staff is very limited in terms of the types of customers allowed to leave the system, and the process under which they opt to choose their own electricity providers. The details are included in: *Final Response of the Commission Staff to Comments on Proposed Competitive Transition Plan*. Prepared by the Staff of the Louisiana Public Service Commission with the assistance of Exeter Associates, Inc. J. Kennedy and Associates and Stone, Pigman, Walther, Wittmann & Hutchinson, LLP, July 2001

(3) Any industrial customer that chooses a competitive provider of electricity, and decides later that it would like to return to utility service, would have to give its host utility notice of one year.

(4) Industrial customers that choose to return to utility service would be required to take the higher of market or regulated prices.

The purpose of this research has been to examine the potential savings and economic impacts associated with the Staff Plan. This report is provided in four additional sections.

The second section of this report examines the current state of Louisiana industrial activity, its electricity consumption, and the importance of electricity to various industrial processes. A comparison of Louisiana industrial rates to those in other states, as well as the overall U.S. average, has also been provided.

The third section of this report outlines the approaches and methods used in estimating the potential industrial choice savings, as well as the economic impact of these savings.

The fourth section of this report provides the estimated savings and the potential economic impacts associated with the proposed Staff Plan.

The fifth and last section of this report presents the study conclusions, and reflects upon the issues associated with sales losses and cost shifting that could result from implementation of the Staff Plan.

The schedules that are referenced throughout the text are provided at the end of this report.

SECTION 2: THE IMPORTANCE OF ELECTRICITY TO LOUISIANA INDUSTRY

Many industrial customers in Louisiana believe that they could realize lower costs, increased service flexibility, and increased on-site profitability if they were allowed to secure their power supplies in open competitive markets, much like they have been doing for years with natural gas. Today, Louisiana's industries are facing the double pressures of global competition and high domestic energy prices. For them, even the slightest reduction in energy costs is significant.

This section of the report examines the issues associated with industrial energy costs, their importance, and industrial customers' perceptions regarding their ability to secure more cost-effective deals in a competitive market.

2.1 Overview of Louisiana's Industrial Power Markets

Industrial users in Louisiana consume a considerable amount of energy. Schedule 4 shows the two primary forms of energy used by each Louisiana industrial sector.[3] While overall energy usage is concentrated in natural gas, industrial electricity use in the state is also significant.

Schedule 5 shows historic Louisiana industrial electricity sales.[4] While electricity sales are lower than that of the mid to late-1990s, they still hover between 25 to 30 million MWh per year. This level of usage makes Louisiana one of the larger industrial users of electricity in the U.S. (see Schedule 6). While total electricity sales for the state currently ranks towards the low end of the country's major purchasers, this ranking hides the true magnitude of Louisiana's industrial usage. Consider that:

(1) Despite a relatively lower level of total industrial sales, Louisiana's industrial customers purchase electricity on a relatively intense basis (i.e., more purchases on a per-customer basis).

(2) Louisiana's industrial customers generate a considerable amount of their electricity, thus, reported sales from utilities (which are presented in Schedules 5 and 6) hide the true magnitude and importance of electricity consumption at the State's industrial facilities.

(3) These numbers tend to be skewed towards the large number of smaller-sized industrial customers that, in most cases, would not be eligible for retail choice under the proposed Staff Plan. Examining these figures on an SIC basis reveals the exceptional magnitude and importance of electricity

[3] Industrial sectors are represented by Standard Industrial Code ("SIC").

[4] These sales are purchases from utilities, and as noted later in this section, do no represent total consumption since many industrial customers can generate their own electricity on-site.

consumption for some of Louisiana's most important industries like chemicals and refining which combined, account for close to half of total manufacturing GSP in the state.

Schedule 7, for instance, shows the recent trends in average industrial sales per customer. While these numbers have been decreasing since the mid-1990s, per customer sales are still around 1,800 MWh per customer. This makes Louisiana the 11th largest per customer industrial purchaser of electricity in the U.S. (see Schedule 8). This is considerable given the fact that close to 26 percent of Louisiana's electricity is generated and used on-site at industrial facilities through cogeneration processes (see Schedule 9 and Schedule 10).

In 2002, Louisiana's industries generated over 23 million MWh of electricity – or 86 percent of the electricity it purchases from utilities on an annual basis. This makes the state the second largest industrial cogenerator of electricity in the U.S. (see Schedule 11) If Louisiana's industrial on-site generation were added to the total sales numbers discussed above, the state ranks in the top five states in terms of total usage (see Schedule 12), and 7th in terms of industrial usage per customer usage (Schedule 13). Historic industrial sales, combined with historic industrial generation, are presented in Schedule 14.

Schedule 15 however, drives home the importance and magnitude of electricity usage for each of Louisiana's industrial sectors. This table examines total and average usage for each industrial sector. The chemical industry, for instance, uses as much as 21.6 million MWhs of electricity annually. The refining industry (Petroleum and Coal Products) can use as much as 6.6 million MWhs, while the paper and pulp industry uses as much as 6.0 million MWhs.

One of the unique aspects of Louisiana's power markets is its overwhelming concentration of industrial customers and sales as a percent of the overall market. Schedule 16, for instance, presents Louisiana's historic industrial sales as a percent of total sales. In 1996, industrial sales amounted to 43 percent of total Louisiana retail sales. The U.S. average during this period was considerably lower, around 33 percent. Since 1996, Louisiana's industrial sales, as a share of total retail sales, have fallen by 20 percent and now stands around 34.5 percent.

2.2 Louisiana's Industrial Electricity Rates, Expenditures, and Competitiveness

Schedule 17 shows historic annual electricity expenditures for Louisiana's industrial customers. During the natural gas price increases of 2000-2001, industrial rates increased to a record $1.6 billion per year level. These expenditures have fallen in 2002-2003 in large part due to the decreases in sales (MWhs purchased) during the period.

Schedule 18 provides a table that estimates the average expenditures by industry sector for 2002. An average firm in the chemical industry, for instance, can spend as much as $6.2 million per year on electricity from utilities. An average firm in the petroleum refining industry can spend as much as $10.5 million per year on electricity, while a typical firm in the paper manufacturing industry spends as much as $5.6 million in annual electricity costs. While considerable, these figures are probably an understatement of total industry-specific electricity expenditure since they are based upon purchases from utilities and do not include the costs of on-site power generation.

Historically, Louisiana has been an attractive area for industrial development, particularly in the chemical and refining industries. Both of these industries arose in the wake of traditional oil production in the region. Refineries, for instance, were established in Louisiana to process the state's crude oil resources (as well as those imported from other areas) into refined products. The chemical industry also grew in this region to develop products from the natural gas that, in earlier decades, had little commercial use.

Low-cost energy inputs furthered the expansive development of the chemical and refining sectors in Louisiana. However, recent shifts in energy prices have put these industries at a considerable disadvantage in an increasingly competitive, and global, marketplace. A recent report by the LSU Center for Energy Studies outlined the implications that changing natural gas prices have on Louisiana industry.[5]

But changes in natural gas prices and their impact on industry are only half of the story. These increases also impact electricity rates since a considerable portion of the state's power generation comes from natural-gas fired generators. For electric utilities, having the lowest cost gas resources, and using those resources in the most efficient manner possible, is critical in keeping rates low for households and businesses.

Consider Schedule 19 which shows Louisiana industrial electricity prices over the past decade. In the early part of the decade, Louisiana industrial electricity rates were competitive with both the Southeastern and national averages. These advantages however, begin to fade relative to the Southeast in 1996 and the U.S. in 2000.

The erosion of this competitive advantage in industrial electricity rates is demonstrated more clearly in Schedule 20. Here, Louisiana's rates are compared as a ratio to both the Southeastern and national averages. A ratio of 1

[5]Dismukes, David E., Elizabeth A. Downer and Dmitry V. Mesyanzhinov. *The Economic Opportunities for LNG Development in Louisiana*. Baton Rouge, LA: Louisiana State University, Center for Energy Studies, 2004. A range of outcomes was presented in this study that examined the implications of various LNG development outcomes and their impact on industrial expenditures and production.

or less means that Louisiana's industrial rates are equal or less than the Southeastern or national average. A ratio greater than 1 means that Louisiana's industrial rates are higher than the Southeastern or national average. As seen in this schedule, Louisiana begins to loose its competitive advantage with the Southeast in 1996 (a ratio at, or exceeding 1) and the national average in 2000.

Perhaps a more important comparison of electricity rates is the one presented in Schedule 21. If one presumes that Louisiana's major competition for job location opportunities are the other states in the southeast, then a direct comparison of our industrial electricity rates relative to neighboring states in the southeast gives us an indication of how competitive we are with regards to part of an industry's energy costs. Schedule 21 shows that in 2003, Louisiana had the highest rates in the southeast. Louisiana industrial rates are almost 2 percent higher than those in Florida and over 4 percent higher than those in Texas.

As noted earlier, Louisiana's manufacturing base is heavily concentrated in the chemical and refining industries. These two industries account for 50 percent of the state's total manufacturing gross state product ("GSP"), and have located in Louisiana because of their dependence on low-cost energy resources and inputs that have been available in Louisiana for decades. However, Louisiana is not the only state with these resources, and another rival for the state's manufacturing base is located on just the other side of the Sabine River.

Texas, like Louisiana, has also historically had low-cost energy resources. Today, Texas is first in natural gas, and second in oil production in the U.S.[6] Several industries that are located in Louisiana have sister facilities in Texas. These affiliated companies have healthy rivalries and compete internally for capital dollars associated with expansions and plant improvements. Louisiana should be seriously concerned when the profit opportunities, and overall consolidation trends, preference Texas facilities over those located in Louisiana.

Schedule 22 presents a comparison of recent historic trends between Louisiana and Texas industrial electricity rates. Like the southeastern and national trends discussed earlier, Louisiana lost its competitive advantage in electricity rates with Texas in 1995. And, with the exception of a one time blip in 2002, Louisiana continues to have industrial rates higher than those of our neighbor and closest competitor for refining and chemical investments.

Schedule 23 examines Louisiana's industrial rates as a percent of those offered in Texas. The erosion of our competitive advantage with Texas is clear. While the differences between Texas and Louisiana rates may appear small, consider that since 1996 (through 2003), they amount to $611 million difference in electricity expenditures, or some $76.4 million per year, on average.

[6]Based on a comparison of combined onshore and offshore oil and natural gas production.

2.3 Industrial Customers' Perceived Opportunities in Competitive Markets

Industrial customers, as well as competitive electricity suppliers, list a host of factors supporting their belief that competitive markets could result in lower retail prices for large industrial plants in Louisiana. These factors include:

(1) Recent trends in regional wholesale power markets.

(2) Trends in retail rates relative to those in wholesale markets.

(3) The successes observed by industrial customers in other markets that have some form of competition.

(4) There is a glut of underutilized independent power generation located throughout the state that could offer industrial customers a wide range of (physical) competitive supplies to choose from.

Regional Wholesale Power Markets: Schedule 24 provides a graph that examines monthly average industrial retail rates and the average wholesale market rates.[7] For the most part, wholesale prices are below retail rates. However, there are a number of instances where wholesale rates are considerably lower than the average retail rate. As seen in the table in the upper right corner of the schedule, since January 2001, both Cleco and Entergy's average industrial rates have exceeded the wholesale market rate by a factor of 1.5 almost 58 percent of the time. Further, Entergy's industrial retail rates have exceeded the wholesale rate by a factor of 2.0 over 6 percent of the time. For Cleco, this occurs over 15 percent of the time.

Conversely, there were a number of occasions where AEP-SWEPCO's retail industrial rates were actually below wholesale market rates. This occurred almost 28 percent of the occasions (or 10 out of 36 months). The only time when Entergy's and Cleco's rates were below wholesale occurred in February 2003 when exceptionally cold weather resulted in natural gas price spikes of $18 per Mcf.

Wholesale rates in the Entergy sub-region are heavily influenced by natural gas prices, a relationship highlighted in Schedule 25. While these wholesale rates will reflect real time shifts in gas prices, regulated industrial rates will not since there is usually a 2-month lag before fuel costs are recovered in rates. Schedule 26 provides a comparison of lagged retail rates to those in competitive wholesale markets. The goal of the schedule is to correct for differences in fuel recovery timing. Despite the adjustment, there are still considerable instances in which retail rates are in significant multiples of those in wholesale markets.

[7] Here, wholesale power rates are defined as the into-Entergy peak prices as reported by Intercontinental Exchange. Off-peak rates would generally be lower.

Industrial Experiences in Other Restructured States: Another factor to consider in estimating potential industrial savings in a limited choice program would include an evaluation of large industrial savings and participation rates in states that have adopted retail choice.[8] While the success of retail choice for all customers is subject to much debate, the one area where choice appears to have been more successful has been with large industrial customers.

Schedule 27 presents a comparison of recent state restructuring experiences as it relates to industrial customers. Retail choice states, and their respective utilities, have been highlighted in this analysis, as well as the number of participating industrial customers and load. One conclusion that can be drawn from this comparison is that while the number of customers choosing competitive providers in the various states is mixed, the percent of load choosing competitive alternatives is usually significant.

Another analysis that should be considered is the level of savings that industrial customers have achieved since the inception of retail choice in their respective states. Rates have been compared pre- and post-restructuring (Schedule 28). Under the total average rate comparison, 10 out of the 14 states examined saw decreases in their industrial rates ranging from less than one percent (Ohio) to close to 15 percent (Maryland). The average decrease across all states is 3.9 percent (this average increases to 5.2 percent when Oregon is excluded).

Louisiana Merchant Power Development: Another source of potential savings for large industrial customers is the option to take service either directly or indirectly from one of the numerous merchant power facilities that have been developed in the state over the past several years. Since 2000, over 7,000 MWs of merchant capacity has been developed in Louisiana alone.[9] This significant amount of development, as well as development in the neighboring states has resulted in considerable regional wholesale market efficiency gains and wholesale price decreases.

Schedule 29 shows the decreases in the implied on-peak market clearing heat rate over the past several years for the Entergy sub-region. While fuel prices may have been increasing over the period, the efficiency with which fuel is being used for wholesale purposes has increased dramatically. This increasing efficiency trend (i.e., decreasing market clearing heat rates) is the direct result of increased supply of competitive merchant facilities in the region.

---

[8]To date, no state has adopted an industrial-only retail choice plan although several are considering the opportunities.

[9]See Dismukes, David E., et.al. *The Power of Generation: Continued Economic Benefits from Independent Power Development in Louisiana*. Baton Rouge, LA: Louisiana State University, Center for Energy Studies, 2003.

There is some reason to believe these new, underutilized merchant generating resources could serve as a competitive source of supply to large industrial customers if they were allowed to exercise these options under a retail choice plan. As shown in Schedule 30, many of these generators are located in very close proximity to eligible industrial facilities. Almost 26 percent of the eligible industrial sales are located within 5 miles of a merchant generator, and close to half (48 percent) of eligible industrial sales are located within 10 miles.

SECTION 3: APPROACH AND METHODS

3.1 Introduction

Estimating the potential savings associated with a limited large industrial choice plan, like the one envisioned in the Staff Plan, is a complicated undertaking. Of all customer classes, the industrial class is one of the most heterogeneous and difficult to model. Every attempt was made during the course of this research to use the most disaggregate data possible. Thus, the data, and ultimately the estimates of rate savings and economic impacts, are based upon firm-specific survey information collected during the period 1999-2002.

This section of the report outlines the various methods, approaches, and assumptions used to model potential retail savings and the economic impacts associated with the Staff Plan. The discussion includes an overview of:

(1) How eligible customers are defined and how they match with the information collected by the LPSC Staff in its Retail Choice Collaboratives Process;

(2) How the base level of rates were determined and how those compare with the base rates established by the LPSC Staff in its Retail Choice Collaboratives Process;

(3) How fuel rates were determined in order to reconcile the varied sources of data that were in mixed terms (i.e., base rate versus total rate basis); and

(4) How large industrial customer retail choice "take-rate" scenarios were determined and modeled.

Any model has a number of assumptions and limitations. The assumptions and/or limitations applicable to our research are discussed in each of the following subsections.

3.2 Definition of Eligible Customers

As noted earlier, this study attempted to avoid averages and generalized aggregations of information wherever possible. Since the LSU Center for Energy Studies ("CES") did not have access to the customer-specific information collected in the discovery process by the LPSC Staff in the Retail Choice Collaboratives Process, an alternative means of examining plant-specific impacts was developed.

Plant-specific information was used in this research for two primary purposes. First, in order to keep with the project goals, estimates were developed to get as close as possible to the individual customer level. Often, broad averages and aggregations of customer data can mask the potential savings, as well as the distribution of those savings, across customers of various different sizes. While

the Staff Plan would only allow customers with loads greater than 5 MW the ability to choose their own electricity provider, initial research indicates that this is still a relatively diverse class of customers.

Second, firm-specific information can be tied to Standard Industrial Code ("SIC") as well as specific parishes located throughout the state. Developing estimates on a SIC and parish-specific level allows rate savings to be directly linked to the CES economic impact models without any adjustments or additional assumptions regarding the industry-specific nature of rate savings. Thus, these firm-specific results serve as the bridge to translate savings to SIC and then into the CES economic impact models.

The CES industrial database was used to estimate: (a) the specific customers eligible for retail choice; and (b) their annual electricity usage. The primary source of information for this database is the Manufacturing and Industrial Plant Database ("MIPD") as modified, customized, and updated in certain instances by CES.

The CES selection of eligible industrial customers came very close to that compiled by the LPSC Staff in its Retail Choice Collaboratives investigation and is presented in Schedule 31. The reconciliation between these two sets of information has been provided in Schedule 32. In general, CES determined that there were 139 customers eligible for industrial retail choice under the terms proposed by the LPSC Staff. The CES estimate is 6 customers greater than the LPSC Staff estimate. Overall electricity usage numbers were three percent lower than those estimated by the LPSC Staff in the Collaboratives Process.

On a per-utility basis, the CES numbers were closely aligned with those estimated by the LPSC Staff for the Entergy companies. CES estimates 111 eligible customers, while the LPSC Staff estimates 112 customers. CES electricity usage estimates were 7 percent lower than those noted by the LPSC staff. The largest difference between the two sets of analyses was found in the AEP-SWEPCO and Cleco estimates. Both eligible customers and loads differ from those estimated by the LPSC staff.

Some reconciliation was conducted in order to bring the CES usage figures into line with the LPSC estimates. No adjustments were made to the number of customers since, at least in the aggregate, they were relatively close to the numbers provided by the LPSC. The electricity usage provided by the LPSC Staff was used as the base level for rate savings estimation purposes. In order to reconcile the two sets of information, the differences between the CES electricity usage numbers and those estimated by the LPSC were pro-rated across all customers based on utility-specific differences and customers.

For example, if the Rhodia Chemical Plant accounted for 1 percent of the total eligible Entergy load, it was assigned 1 percent of the Entergy-only

underestimate amount. This adjustment helps bring the two sets of usage numbers to equal levels on a per customer and aggregate basis. Similar calculations were conducted for AEP-SWEPCO and CLECO which also helps to address the larger usage imbalances (but makes no correction in eligible customers).

3.3 Definition of Baseline Level of Rates

In order to accurately assess savings, a baseline set of rate information must be developed. Overall industrial average revenue, as collected by the U.S. Department of Energy, Energy Information Administration ("DOE/EIA") is one potential source of information. However, this information can average over important differences in rates for large industrial customers.

Consider, for instance, that large industrial customers taking interruptible service or special contract service, get significant discounts relative to traditional large service tariff rates. Using an average would be misleading since the average rate would be higher than these discounted interruptible rates, and would overestimate the potential savings associated with choice for these types of customers.

As noted earlier, this study attempted to use the most disaggregate rate information possible. Thus, the baseline average revenue information used in this study is based upon FERC Form 1 Rate Schedule information. 2002 rate schedules for each utility were collected from information provided in the annual FERC Form 1 filings.

Rate schedules for large industrial customers were separated and customers were then allocated by type of service (i.e., large power service, interruptible service, high load factor, special contract). Average revenues provided in these schedules are on a total company basis and include fuel as well as base revenues.

This study also considered the average revenue information compiled by the LPSC Staff and presented in Table 1 of the Retail Choice Collaboratives Process Recommendations Report (Schedule 31). This table provides rate information (i.e., average revenues) in base revenues terms only.

One of the problems with using both of these sets of rate information (FERC Form 1 and LPSC Collaboratives data) is that they are based on different terms. The FERC Form 1 information is based on a total rate basis (which includes fuel), while the LPSC Staff data is on base rate terms alone. Further, as will be discussed later, a number of other rate options considered in the analysis are also developed on a current total rate basis, including fuel. Thus, some method needed to be developed that reconciled these various types of information.

A utility-specific fuel rate was determined based upon existing generation levels and fuel amounts. Contemporaneous fuel prices were used in order to develop a fuel cost per kWh amount. Data used to develop these estimates comes from the FERC Form 423 (fossil fuel usage), Form 928 (generation), and Form 1 (annual nuclear generation). The fuel rates were then added to the LPSC information to develop a total rate, and were removed from the FERC Form 1 data to develop a base rate. All numbers were trued-up to current market gas prices (based upon Henry Hub spot prices).

3.4 Definition of Potential Sources for Savings

Another significant modeling design question in this investigation included the development of the potential sources of savings in a limited, large industrial-only retail choice environment. This study examined a variety of potential outcomes including:

- Observed Retail Energy Providers ("REP") Savings Option;
- Fixed Heat Rate Contract Option;
- Cogeneration/Affiliate Wheeling Option; and
- Average Utility Rate Discount Option

The development of each of these options is discussed in further detail below.

Observed Retail Energy Provider ("REP") Savings Option: This option considers the potential discount that industrial customers could obtain in a retail choice environment. The savings ranges are based upon "observed" REP discounts – that is, discounts that industrial customers are currently getting in states that allow large customer retail choice. These numbers were collected from the DOE/EIA, and are simply the differences between the utility-provided industrial retail rate, and those currently offered by competitive energy service providers.

Three different ranges of rate discounts were considered. The first range was the "average" savings currently observed in retail choice states. This average is simply the average of all discounts offered across all retail choice states and is currently around 20.2 percent.

The second discount range considered was the maximum savings amount. This analysis applied the highest observed discount observed for states with retail choice. The highest percent discount offered by any state currently offering industrial retail choice is 47.5 percent. It should be noted that initial CES analysis of this discount revealed that this order of magnitude discount is not likely since it would result in industrial retail rates that are considerably lower than regional wholesale market rates.

The third discount range was the minimum observed savings level in industrial retail choice states. In this instance, the minimum discount was actually a 29.2 percent increase in rates (Maryland). An increase like this is a highly unlikely outcome for Louisiana given the recent trends in wholesale markets and the large amount of highly efficient merchant generation in the region.

Fixed Heat Rate Contract Option: The second retail choice option was to examine how existing utility-offered industrial retail prices compare to fixed heat rate contracts. Fixed heat rate contracts have become popular and common methods for retail service that have been offered by competitive REPs, particularly those in Texas.[10]

Fixed heat rate contracts simply charge the industrial customer a fixed heat rate amount for power generation. Common market contract heat rate levels now in Texas are around 8,000 Btu/kWh. These heat rates are multiplied by current market prices for natural gas (either Henry Hub, Houston Ship Channel, or some other negotiated market basket) to obtain the going price for electricity. The contracts are simple given their transparency to the end user. A total $3/MWh delivery charge was assessed on these transactions based upon roughly a $1/MWh fee for transmission, and $2/Mwh fee for ancillary services.

Cogeneration/Affiliate Wheeling Option: Another option in a restructured market is that large industrial customers with on-site steam and power production could co-generate electricity on-site and move that power to other affiliates located in the state. This study estimated the number of customers potentially eligible under this option. Multi-facility companies were first selected from the site-specific industrial database used in this investigation. The operating characteristics were then examined to determine whether an affiliate wheeling/cogeneration option existed. Candidates for this option were selected on the basis of whether they had: (a) cogeneration on site at one location; or (b) had the technical capabilities of cogenerating at a given site (high steam temperature loads and production relative to total energy use). A delivery fee of $3/MWh was also assumed to develop a total delivered rate.

Average Utility Rate Discount Option: Even in instances where customers choose to remain with the incumbent electric utility, there are possibilities for ongoing rate savings. Usually in these instances, utilities offer some savings to keep industrial customers on the system. Savings ranges were generated for this option from data collected by the DOE/EIA. Pre-restructuring rates were compared to post-restructuring rates. Three ranges were examined: (a) the average savings amount across restructured states; (b) the maximum savings amount experienced across restructured states; and (c) the minimum savings amount experienced by industrial customers in restructured states. In the case

[10]These contracts are being offered in the areas of Texas that are open for retail competition which include the entire Electric Reliability Council of Texas ("ERCOT") area. The non-ERCOT areas of Texas are current not open to full retail choice.

of the minimum savings amount, there was actually a rate increase experienced (see Schedule 28).

3.5 Scenario Development

Three different retail choice scenarios were considered. Each scenario examined the implications of different retail choice take decisions by industrial customers and range from very aggressive adoption to low levels of adoption.

Under Scenario 1, the most aggressive retail choice option, 100 percent of the customers determined to be eligible for the affiliate wheeling/cogeneration option were assumed to take advantage of this opportunity. Some 75 percent of the remaining customers were then assumed to choose a competitive retail energy provider, while the remaining 25 percent stayed with the utility.

Under Scenario 2, a more moderate adoption scenario, 75 percent of the industrial customers eligible to take affiliate wheeling/cogeneration options were assumed to switch. The remaining customers were split on a 50-50 basis (50 percent choosing a REP, 50 percent staying with the utility).

Under Scenario 3, a low-adoption scenario, 25 percent of the eligible affiliate wheeling customers leave the utility. Some 75 percent of the remaining customers stay with the utility, while only 25 percent choose a competitive electricity provider.

For each of the scenarios, the largest customers in the affiliate wheeling scenarios were assumed to choose first. For example, in Scenario 2, 75 percent of the largest customers were assumed to develop affiliate wheeling/cogeneration options. The remaining (non-choosing) affiliate wheeling candidates were then assigned to utility service.

For the choice scenarios, customers were selected on a random basis. Eligible customers were ranked via a randomly assigned number. Customers were selected in increasing order until the total cumulative sales met the pre-assigned scenario thresholds.

Percent determinations are based upon loads and not the number of customers. For instance, in Scenario 1, 75 percent of the randomly selected load was determined to choose its own electricity provider. Loads are often times lumpy, particularly for the relatively smaller utilities. Every attempt was made to set percentages as close to the threshold amounts as possible with a bias to the low side of the thresholds. Therefore, if the summation of eligible loads for Scenario 1 (which has a 75 percent threshold) had observed “break-points” at 71.5 percent and 77.1 percent, customers were selected up to the 71.5 percent level and not the higher amount.

SECTION 4: EMPIRICAL RESULTS

4.1 Analysis of Eligible Customers

As noted in Schedule 32 there are 139 industrial customers, with 20.9 million MWh of sales, estimated to be eligible for customer choice under the proposed Staff Plan.[11] The majority of these eligible customers are served by Entergy (89 percent).

Schedule 33 shows the location of each of the industrial customers that are eligible under the Staff Plan. These customers are located throughout the state, but it is clear that there is a significant concentration in South Louisiana. Almost 13 percent of the eligible customers are located in Ascension Parish, 9 percent are located in Calcasieu Parish, and 9 percent are located in East Baton Rouge Parish.

The industrial customers eligible for retail choice under the Staff Plan account for a considerable amount of manufacturing employment within their respective parishes. Schedule 34 shows the employment figures for those eligible customers throughout the state. Eligible customers in Caddo, for instance, account for 13 percent of the 2002 employment levels of all eligible customers.

There are 20.9 million MWh of usage for industrial customers eligible for retail choice under the Staff Plan. Schedule 35 shows the estimated concentration of these sales, by parish. At over 21 percent of sales, Calcasieu Parish has some of the highest concentrations of eligible sales of any individual parish in the state.

Schedule 36 provides a break-down of estimated eligible sales by major industry category (standard industrial code, or "SIC") in the state. It probably comes as no surprise that the overwhelming majority of the eligible industrial sales under the Staff Plan are associated with chemical (55 percent) and refining (23 percent) production.

4.2 Analysis of Estimated Savings

Schedule 37 presents an overall summary of estimated 2002 estimated electricity usage and expenditures for industrial customers eligible for retail choice under the proposed Staff Plan. Two sets of expenditures have been provided: one based upon estimates using average revenues from the FERC Form 1 information[12] (hereafter CES expenditure estimates), and the other using

[11]The remainder of this study will refer to count estimates developed by CES and not those presented by the LPSC Staff in its Retail Choice Collaboratives Process. Usage data has been reconciled to match on a total company basis and therefore do not differ.

[12]Usage levels that are used to develop total expenditures are the same for both the LPSC estimates and those developed by CES. The only difference in the total expenditure

average revenue information developed by the LPSC Staff in its Retail Choice Collaboratives process. The CES estimated expenditures are $1,098,469,000 while the LPSC Staff estimates are slightly higher at $1,098,860,000.

Schedule 38 examines total estimated savings on a utility-specific basis. Recall that each scenario makes a number of assumptions regarding industrial "take rates" of the various options available in a competitive market. These options include:

(1) Affiliate wheeling/cogeneration;

(2) Choosing a competitive electricity provider; and

(3) Maintaining competitive service with the incumbent utility.

For purposes of this analysis, option 2 listed above (choosing a competitor) has been examined from two different perspectives. The first is the average savings approach which assumes that Louisiana industrial customers will get savings comparable to those that have occurred, on average, in other retail choice states. The second estimated savings approach assumes that industrial customers will attain a savings level comparable to those resulting from taking service under a fixed heat rate contract of 8,000 Btu/kWh with a delivery charge. The tables presented on Schedule 39, provide scenario savings under both approaches.

As indicated in an earlier section, Scenario 1 assumes that 100 percent of the candidates eligible to take advantage of an affiliate wheeling/cogeneration opportunity will do so. Of the remaining customers, 75 percent will choose a competitive provider and 25 percent will stay with the incumbent utility and receive a small discount to prevent these customers from leaving. The high acceptance (or "take-rate") of industrial customers in this scenario makes it the more aggressive of the three simulated scenarios.

Of the three utilities, AEP-SWEPCO industrial customers would appear to gain the least under a limited retail choice plan. Based upon the estimates generated in this research, AEP-SWEPCO customers stand to gain only $3.7 million from retail choice under an average savings approach. If competitive customers were served under a more conservative fixed heat rate contract, they would actually loose $2.3 million. Given this range, it seems unlikely that there are a considerable number of competitive opportunities for AEP-SWEPCO customers from the proposed Staff Plan.

Cleco's large industrial customers, however, appear to have several opportunities for competitive gains in a competitive market. Based upon the results of this research, eligible Cleco industrial customers, under the conditions

---

estimates are based upon the average revenue (i.e., price) estimates used to multiply by usage to get total annual expenditures.

posited in Scenario 1, could gain between $21 million (average savings approach) to $22 million (fixed heat rate approach).

The largest estimated savings opportunity under Scenario 1 rests with the Entergy operating companies. Industrial customers served by Entergy could save between $186 million (average savings approach) to $110 million (fixed heat rate approach) under the proposed Staff Plan. Based upon the estimates in this research, a considerable portion of these savings could come from eligible industrial customers taking advantage of affiliate and cogeneration options (33 percent).

Schedule 39 presents the estimated savings levels for eligible customers by industry type. The two largest industry beneficiaries from the proposed Staff Plan are the chemical and refining industries. The chemical industry stands to gain between $66 to $116 million, while the refining industry could see gains between $31 and $46 million. The third largest industrial beneficiary is the paper manufacturing industry ($20 to $23 million) which is located primarily in Cleco's service territory.

Schedule 40 presents a map that estimates the distribution of the estimated industrial savings that could result from the Staff Plan by parish for the average savings approach, Scenario 1. Almost 15 percent of the total estimated savings occur in Calcasieu Parish. Twelve percent of the estimated savings occur in both Iberville and Ascension Parish. All three of these parishes are large centers for chemical and refining industries.

Schedules 41 and 42 present maps examining the average savings estimates for Scenarios 2 and 3. Recall that:

- For Scenario 2, 75 percent of the affiliate wheeling candidates were assumed to facilitate their options (the remaining 25 percent were assumed to stay with the utility) while the remaining customers choose on a 50/50 basis between competitors and the incumbent utility.

- For Scenario 3, only 25 percent of the eligible affiliate wheeling candidates are assumed to choose this option (the remaining 75 percent remain with the utility). The remaining customers stay primarily with the incumbent utility (75 percent) and only a small amount select competitive providers (25 percent).

For Scenario 2, the potential savings for AEP-SWEPCO decrease considerable to a level of $1.6 million. The savings for the fixed heat rate option is actually higher at $2.4 million. The savings levels under both Scenarios 2 and 3 are higher than Scenario 1 for the simple reason that most customers opt to remain with the incumbent utility and take a small, guaranteed reduction in utility-based rates rather than risk being served by a competitor (with higher prices). It is not clear how realistic these savings are given the fact that SWEPCO's rates are

already competitive, and the incentive for the Company to offer further discounts (the primary source of these estimated benefits) would be limited.

For Scenario 2 and 3, Cleco customers could see a relatively significant level of savings. For Scenario 2, these savings hover around $15 million for both choice approaches (i.e., average savings and fixed heat rate). Under Scenario 3, these savings fall to a level of around $6 million.

One of the major beneficiaries of the Staff Plan under Scenario 2 and 3 are the industrial customers served by the Entergy operating companies. These savings range from a high of $133 million (average savings approach) to $90 million (fixed heat rate approach) under Scenario 2, to a range of $76 million (average savings approach) to $61 million (fixed heat rate approach) under Scenario 3.

Schedule 39 shows that the chemical and refining industries continue to receive a significant share of the potential benefits associated with the Staff Plan under both scenarios. The paper manufacturing industries continue to hold third place in terms of savings under Scenarios 2 and 3.

Schedule 43 provides a map of the distribution of savings by parish under the fixed heat rate approach. Like Scenario 1 in the average savings approach, Calcasieu and Ascension parishes lead the state in savings, but this time, Ascension Parish is the main beneficiary (16 percent of the savings), followed by St. James (13 percent) and Calcasieu (12 percent). Scenarios 2 and 3 are presented in Schedules 44 and 45.

The large rate savings presented in the various scenarios indicate that there are some relatively considerable opportunities for industrial rate savings, particularly under Scenario 1. Some caution, however, should be used in interpreting these numbers. Based upon the estimates included in this report, there are considerable savings opportunities in the aggregate. This is not to suggest though, that ***all*** utility rates are uncompetitive with the market. There are several instances where the estimated rates offered by utilities are better than those estimated to be offered in the market (under a fixed heat rate approach). Consider:

- CLECO's Large Power Service ("LPS") rates are competitive with the estimated market rate at 8,000 fixed heat rate contract (average LPS rates are estimated to be $0.0477 with a fixed heat rate contract rate at a higher $0.0490). However, based upon 2002 FERC Form 1 data, only 3 customers are able to participate in this rate. If other eligible customers were able to migrate to this rate, estimated savings would be considerably lower.[13]

[13] If all eligible CLECO customers were allowed to take service under the Company's largest rate schedule, customers would actually lose (have negative savings) if they left for a

- Entergy's curtailable service rate (CS-25) are competitive with the market (average CS rate of $0.0476 compared with a higher fixed heat rate contract amount of $0.0490). However, only 27 of the 112 eligible customers are able to take advantage of this rate. Further, these rates are interruptible and not firm as they would be under a fixed heat rate contract.[14] The next nearest set of estimated rates (which are firm), under which a large number of customers were estimated to take service, hovered in the $0.05 to $0.06 range and were not as competitive with the estimated market rate.

- AEP-SWEPCO's industrial rates are very competitive and actually below most all estimated market rates (estimated average LLP service rates of $0.370 versus an estimated fixed heat rate contract amount of $0.0490). However, according to the 2002 FERC Form 1 data, only one customer took service under this rate. Again, if other customers migrated to this tariff (or some variation) it seems likely that most of the savings attributable to competition would be considerably reduced.

It should be noted that in many instances, on an industrial-firm specific basis, there are actually negative savings that result from the competitive market estimates: these numbers, however, wash-out in the aggregate. The reason for the overwhelming level of aggregate savings rests with two factors:

- In some instances, there are still considerable estimated savings opportunities for affiliate wheeling and cogeneration options. Despite very attractive rates relative to the market, it is difficult in many instances for utilities to beat the efficiency advantages of the on-site combined heat and power applications that appear to still be apparent at a number of facilities in Louisiana. This is particularly true for some Entergy industrial customers (even some of whom take relatively competitive CS service), and a few paper and pulp customers for CLECO.

- There are considerable opportunities for savings from the majority of the customers not getting special industrial rates listed above that are more competitive with the wholesale market. These savings opportunities add-up in the aggregate.

- Some of the saving are attributable to the competitive effects of lower utility rates which are assumed to be offered in the face of more

---

competitive provider. The only other opportunities for savings would be associated with cogeneration/affiliate wheeling opportunities with paper and pulp mills.

[14]A monetary adjustment for the qualitative difference in the types of power taken under interruptible (CS) versus firm service would more than likely remove the apparent competitiveness of the CS rates.

competitive pressures. Industrial customers that are currently being offered utility rates that are competitive with the market are probably not as likely to get discounted service as those that are being actively courted by competitors.

4.3 Analysis of Estimated Economic Impacts

Major shifts in expenditures can result in considerable changes in the nature of economic activity in a particular region. The savings associated with the proposed Staff Plan could have additional impacts that are felt throughout the state's economy. These "multiplier" impacts are premised upon the notion that a dollar spent on a given activity in a regional economy can generate significant additional dollars in supporting economic activity as well as through the additional purchasing power created by new incomes. This section of the report estimates those impacts.

Savings are treated as the direct impacts or shocks in local economies resulting from industries acting on the opportunities afforded to them under the proposed Staff Plan. Holding the current level of usage constant, these savings will allow industries to redirect dollars to other activities that could include such things as deferred plant maintenance, equipment purchases and upgrades, local charitable contributions, and employee training and development programs.

Some correction has to be made, however, for leakages from the Louisiana economy. It is not reasonable to assume that every dollar saved in Louisiana on electricity expenditures, for instance, will stay here.[15] Our direct economic impact estimates makes corrections for these leakages. As a result, the direct impacts will not exactly match the total savings amounts discussed earlier. Total economic impacts, therefore, should be thought of as being represented on a "net" basis (i.e., net to the Louisiana economy).

There is also a host of indirect and induced impacts, also know as "multiplier" impacts. Indirect impacts are those dollars expended in support activities for a particular industry. For the chemical industry it could be the additional dollars generated by vendor and service company activity. The induced impacts are the dollars spent by the employees engaged in both direct and indirect activities.

Schedule 46 shows the economic impacts for each of the three scenarios under investigation with each page highlighting the results from each of the three scenarios under an average savings approach. The impacts include:

(1) ***Output Impacts:*** the change in regional economic output/production associated with the change in electricity expenditures.

[15]Profits, for instance, will accrue to shareholders that reside outside of the state. Further, lower electricity expenditures will allow firms to purchase more of other, non-electricity related goods and services, many of which will come from firms outside of Louisiana.

(2) ***Employment Impacts:*** the change in jobs associated with a change in electricity expenditures.

(3) ***Employee Compensation Impacts:*** a subset of value added that includes the change in wages associated with a change in electricity expenditures.

While each table included in Schedule 46 outlines each of these impacts, a number are worth highlighting. Under the average savings approach, in Scenario 1, there is $118 million in total estimated economic output effects associated with the proposed Staff Plan. These output impacts decrease to $81 under Scenario 2 and $55 under Scenario 3.[16] In terms of employment, 454 jobs are estimated to be created by the savings generated under the proposed Staff Plan under Scenario 1 (average savings approach). These employment opportunities decrease to 310 jobs for Scenario 2 and 202 jobs for Scenario 3.

On a per-industry basis, the most pervasive economic effects of the proposed Staff Plan are felt by the chemical and refining industries. Under Scenario 1, the output impacts are large as $22 million for chemicals and $44 million for refineries. From an employment perspective, 47 and 20 jobs are assumed to be created in the chemical industry and refining industries, respectively. An additional $5.3 million associated with new employee compensation is also added in Scenario 1.

Under the fixed savings approach (Schedule 47), in Scenario 1, there is $76 million in total estimated economic output effects associated with the proposed Staff Plan. These output impacts decrease to $65 under Scenario 2 and $47 under Scenario 3.[17] In terms of employment, 292 jobs are estimated to be created by the savings generated under the proposed Staff Plan under Scenario 1 (fixed savings approach). These employment opportunities decrease to 243 jobs for Scenario 2 and 173 jobs for Scenario 3.

Again, on a per-industry basis, the most pervasive economic effects of the proposed Staff Plan are felt by the chemical and refining industries. Under Scenario 1, the output impacts are large as $12.5 million for chemicals and $30 million for refineries. From an employment perspective, 26 and 13 jobs are assumed to be created in the chemical industry and refining industries, respectively. An additional $3.2 million associated with new wages (i.e., employee compensation) is also added in Scenario 1.

[16] Impacts are based upon savings estimated using the average savings approach.
[17] Impacts are based upon savings estimated using the average savings approach.

SECTION 5: CONCLUSIONS

The results of this analysis suggests that there are considerable savings that would accrue from a limited retail choice plan for large industrial customers. The ripple effects that would be generated from such a proposed plan could be equally impressive. Based upon the analysis included in this report, savings could range from $211 million under a very aggressive retail choice adoption scenario, to $69 million under more modest adoption rate assumptions. The net economic impacts for Louisiana range from a high of $118 million to a low of $47 million in terms of output effects, with job creation ranging from 454 jobs to 173 jobs.

A proposal to move forward with a limited form of large customer retail choice, like that proposed by the LPSC Staff, does not, however, come without a certain set of costs. And, as is true with any public policy, these costs need to be compared with benefits to determine the overall net benefits.

In terms of costs, the clearest challenge associated with a large industrial customer choice plan is the potential impact that such a large shift in sales could have on the remaining residential and commercial customers. However, if large amounts of load abruptly leave, there will be arguably fewer customers (and sales) to recover overall utility costs. This assumes that costs are relatively constant to increasing over time and that no other sales growth occurs to offset the losses associated with competition.

As seen in Schedule 48, residential customers have rates around the regional average, and well below the national average. Any plan for limited industrial retail choice would need to ensure that these trends are preserved. Thus, a close understanding of the amounts of load at risk relative to future utility resource requirements and commitments needs to be considered.

5.1 Analysis of Competitive Sales Leaving the Utility System

Schedules 49 through 56 present a number of analyses that put the potential load loss/cost shifting argument into perspective. Schedule 49, for instance, shows that estimated total eligible industrial sales represents about 70 percent of total Louisiana industrial sales. However, Schedule 50 shows that total eligible industrial sales represents 26 percent of total Louisiana retail sales (i.e., the sum of all retail, commercial, and industrial sales).

Schedules 51 through 53 examine the allocation of industrial sales choosing competitive providers relative to total retail sales. Under Scenario 1, competitive sales represent only 22 percent of total Louisiana retail sales. Under Scenario 2 (Schedule 52), industrial sales leaving for competition represent only 14 percent of total retail sales, and under Scenario 3, they represent 5 percent of all

Louisiana retail sales (Schedule 53). Schedules 54 through 56 provide similar information on a utility-specific basis.

Each of the analyses included in the schedules referenced above compares industrial sales potentially leaving for competitive service relative to overall retail sales. Clearly, under Scenario 1 – the most aggressive of all under investigation – the sales potentially leaving the system are considerable. They represent close to one quarter of the total retail sales.

Competitive sales in Scenarios 2 and 3 are only 14 and 5 percent of total retail sales in each of these scenarios. Clearly, levels that are more manageable – particularly if such a plan were implemented over time.

5.2 Other Factors For Consideration In Offering Large Industrials the Opportunity for Choice

On the benefit side of the equation, the estimated savings and economic impacts in this study are perhaps some of the more significant reasons to implement a large industrial choice plan like that proposed by the LPSC Staff. There are, however, a few additional benefits that the Commission should consider.

The first would be the potential to deter future capacity purchases. The ability to allow large customers to leave the system over time could take some pressure off regulated utilities that are capacity short and need to enter the market to purchase generating resources. Consider Schedule 57 that shows Entergy's capacity resource requirements over the next several years. These requirements, which are as large as 4,800 MW over the next several years, are comparable to the amounts of industrial load that is eligible for retail choice under the proposed staff plan.

Schedule 57 has two lines estimating the eligible industrial load based on a 65 percent and 85 percent average load factor. The schedule corrects for interruptible customer usage estimates that utilities typically do not plan for in future capacity requirements analyses.

It should be noted, however, that over the past several years, Entergy has been in the process of securing supply resources from a variety of sources to meet its forecasted capacity shortfall. While some of these resources have been approved by the LPSC: (a) approval of some are currently tied up in litigation and (b) the Company still has requirements in a number of outlying years.

Schedule 58 outlines the known Entergy capacity purchases for the next several years. Schedule 59 estimates the "net" requirement based upon existing Entergy generation commitments and the estimated total industrial load eligible under the Staff Plan. As seen in the schedule, Entergy will have plenty of generating resources prior to 2007. If eligible industrial customers were to leave, Entergy

would have a “negative” resource requirement – meaning that they would actually have more generation than needed. After 2007, Entergy becomes short of generating capacity, even with all estimated eligible industrial customers leaving the system.

In examining the sales loss issue relative to potential rate impacts, a less encouraging factor that should be noted is that the Commission, and the State of Louisiana, may be in a position where it may have to accept one of two different types of load losses if relief from high energy prices (both gas and electric) are not forthcoming:

- Does Louisiana allow large industrial customers to choose their competitive providers and attempt to manage the cost-shifting implications over time? or

- Does Louisiana do nothing with regards to industrial energy costs, and allow these operations to become more and more unprofitable in Louisiana relative to other areas of the southeast and the world?

Under the first scenario, the State manages the effects of some potential rate increases, but is able to maintain some semblance of its industrial base, its employment, tax revenues, and other associated economic benefits.

Under the second scenario, in the short run, rate support is maintain, but slowly, over time, industrial sales fall because plants cut back and eventually shut down. Under this scenario, the state looses:

- economic benefits from the linkages these industries have with business throughout the state;

- employment;

- tax revenues; and

- rates will still increase because sales are still lost, and costs still have to be recovered from residential and commercial customers.

Schedules 60 through 65 show the relationship between gas prices, electricity prices, and employment for three very energy intensive industries in the Louisiana economy: chemicals; refineries; and paper manufacturing. The combined job loss for these three sectors since 1998 has been 6,400 (to 2003). At some point, these job losses and industrial contractions will have an impact on utilities sales, if this is not already apparent.

In examining potential load loss/cost-shifting issue, it may be instructive to re-examine Schedule 16 which shows Louisiana industrial sales as a percent of total retail sales. Today, industrial customers’ share of total retail sales has fallen

to a record low for the last twenty years and is still decreasing. Since 1996, Louisiana industrial sales have fallen by some 5.4 million MWhs:[18] an amount that is equal to 25 percent of all of the eligible sales under the LPSC Staff plan. Further, these sales decreases are at an amount greater than all the sales leaving for competition under the Scenario 3 estimates included in this report, and close to half of the sales that would leave for competition under Scenario 2.

[18]As noted in an earlier section of this report, the decrease in sales from 1996-2000 were in large part associated with industrial customers leaving for cogeneration options. From 2000 onwards, these sales losses appear to be associated with the contraction of industry.