File No. CT 98/2

THE COMPETITION TRIBUNAL

IN THE MATTER OF THE *COMPETITION ACT*, R.S. 1985, c.C-34, as amended, and the *Competition Tribunal Rules*, SOR/94-290, as amended (the "*Rules*");

AND IN THE MATTER OF an inquiry pursuant to subsection 10(1)(b) of the *Competition Act* relating to the proposed acquisition of ICG Propane Inc. by Superior Propane Inc.;

AND IN THE MATTER OF an Application by the Director for an order pursuant to s. 92 of the *Competition Act*.

B E T W E E N:

THE COMMISSIONER OF COMPETITION — **Applicant**

- and -

SUPERIOR PROPANE INC. et al. — **Respondents**

AFFIDAVIT OF RICHARD SCHWINDT AND STEVEN GLOBERMAN

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AFFIDAVIT OF RICHARD SCHWINDT AND STEVEN GLOBERMAN

We Richard Schwindt and Steven Globerman of the cities of Abbotsford, ~~in the~~ BC, and Bellingham, WA, USA respectively, JOINTLY AND SEVERALLY MAKE OATH AND SAY: SG

1. Attached hereto and marked as Exhibit "A" is a true copy of our evidence. The contents of Exhibit "A" and the findings and opinions expressed therein are true to the best of our knowledge, information and belief.

2. We were retained by counsel for the Commissioner of Competition to provide expert economic evidence in this matter.

3. Attached hereto and marked as Exhibit "B" and "C" are true copies of our curricula vita.

4. We make this affidavit pursuant to Rule 47(1) of the *Competition Tribunal Rules*.

Jointly and Severally
Sworn/Affirmed before me
at the city of Abbotsford in
the Province of BC, on
August 16, 1999

Commissioner for Taking Oaths, etc.

PETER MORAWSKY
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Steven Globerman

Richard Schwindt
Steven Globerman

This is Exhibit "A" to the Affidavit of Richard Schwindt and Steven Globerman sworn before me at the city of Abbotsford in the Province of BC this 16th day of August, 1999

A Commissioner for Taking Affidavits, etc.
A Notary Public or other such officer entitled to take
oaths or affirmations in the said jurisdiction

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I. INTRODUCTION

The purpose of this report is to provide an evaluation of the competitive effects of the proposed merger between Superior Propane Inc. and ICG Propane Inc. The analysis proceeds in the usual fashion. First, the relevant product market is defined. Then, the relevant geographic market is set out. Using the appropriate market definition, the impacts of the proposed merger upon the structural characteristic of seller concentration are identified. This is followed by a review of the likely competitive impacts of changes in seller concentration in the relevant market. Finally, the condition of entry into the relevant market is analyzed in order to determine its potential effect upon the post-merger state of competition.

The evaluation is based upon a review of extensive documentation provided by the parties, examinations for discovery, a review of print and electronic media, and primary research conducted by the authors.

II. THE PRODUCT MARKET

In evaluating whether a merger is likely to have substantial anti-competitive effects, it is first necessary to define the market relevant to the analysis. There are two dimensions to any market definition: the product dimension and the geographical dimension. The definition of the relevant product market for antitrust purposes proceeds (in practice) by including all close substitutes in the relevant product set. A market for antitrust purposes has been identified when an inclusive set of producers can increase their price(s) profitably by a substantial amount for a significant period of time.[1]

At issue in the case at hand is whether propane distribution constitutes a relevant product market. Based upon the analysis that follows, the conclusion is reached that retail propane distribution does constitute a relevant product market.

A. Market Segments

The parties to the proposed merger are primarily engaged in the distribution and retail sale of propane, propane consuming equipment and related services. To a lesser extent, they also engage in wholesale propane distribution. Propane distributors differ significantly in size, services offered and geographical reach. Propane buyers differ significantly in terms of volumes consumed, geographical requirements, and, most importantly, their use of this fuel. These uses, or applications, range from heat, to

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[1] As set out in the Director of Investigation and Research's *Merger Enforcement Guidelines,* the benchmark threshold price increase for this "hypothetical monopolist" definition of a relevant market is five percent.

carburation, to materials cutting. At issue is whether this variation on either the sellers' or buyers' side of the market is so significant as to render segments relevant product markets unto themselves. This subject is addressed throughout the following analysis.

1. Supply Side Segmentation

While consumers differ across the various segments, as well as the nature of the activities in which they are engaged, propane itself is a homogeneous product. Notwithstanding the homogeneity of the physical product, the distribution of propane can be differentiated in several important ways. For example, distributors may be differentiated by the ancillary services that they provide to customers such as supplying and servicing storage facilities and training propane handlers. They may also be differentiated by their reputations as more or less reliable suppliers.

Another important source of differentiation is the ability of the seller to supply the customer at multiple locations. For example, Superior and ICG, by virtue of their size and geographic scope, enjoy a competitive advantage in winning contracts from large volume customers who require propane delivery at multiple points. From the buyer's perspective, this advantage stems from the administrative ease of dealing with a single supplier. Put simply, dealing with a single propane distributor would lower the buyer's transaction costs. These would include the negotiation of contracts, administration of contracts (e.g., the organization of shipments, billing, payments, dispute resolution), provision of training in propane handling, and the identification of responsibility in the event of an incident.

It is also likely, for specific applications, that all propane distributors do not view all propane users as likely customers (and vice versa). For example, documents suggest that it is not easy for small bulk delivery operators to serve the propane cylinder exchange segment. Similarly, there are impediments to entering the construction heat and roofing segments due to the need for specialized assets.[2]

The importance of whether or not customers make meaningful distinctions among different potential suppliers of propane is ultimately related to the issue of whether customers will quickly substitute the services of one propane supplier for another if the suppliers' relative prices change. The existence of strong distinctions unrelated to prices charged could mitigate or attenuate such substitution. This issue is not emphasized in this report, since, for most appropriately defined geographical markets, the merged

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[2] For example, an SPI document indicates that there are capital barriers to entry to both cylinder exchange services (because of the need for specialized assets such as filling belts and cylinder trucks), and the construction heat/roofing segment (because of the requirement for heaters and vaporizers). See the SPI documents titled "Alberta Central Market Segmentation Study - December 1995," and "3. Running the Business Well in 1996."

parties will account for the majority of propane sales made by all suppliers. Hence, even if it were assumed that all propane distributors in a geographic market are homogeneous, the market share of the merged entity would exceed any reasonable threshold below which one could assume that no lessening of competition would result from the merger. That is, evaluating the potential for the merger to have anti-competitive effects does not hinge critically on the issue of whether non-competing groups can be identified among incumbent suppliers in any given geographic market. Nevertheless, the differentiation that exists between SPI and ICG and other sellers of propane has some relevance for the degree of competition in the post-merger period, especially for particular customers. The relevance will be discussed presently.

2. Demand Side Segmentation

Propane buyers clearly differ in terms of their use of this fuel. A sense of the varied consumer groups and applications is provided by Table 1 which sets out the relative importance of the four traditional segments (residential, commercial, agriculture and industrial) and the more recent (but declining) automotive sector.[3] For certain uses, such as space and water heating, propane is used in all of the traditional segments. In other cases, propane is used for applications that are specific to individual segments, such as the generation of process heat for industrial activities, and in drying agricultural crops.

This heterogeneity in application seriously complicates the identification of the relevant product market because it makes it necessary to isolate economically feasible energy substitutes (i.e., other products that belong in the market) for a myriad of market segments. This is a formidable task. In what follows, we have focussed on the major applications shown in Table 1 in order to make the exercise more tractable. In so doing we recognize that we have ignored a number of specific applications (and therefore customers) that depend to a greater or lesser extent on the distributors of this fuel.

In addition to end-use distinctions, customers can also be divided in terms of the volume and geographic dispersion of their propane requirements. For example, some buyers require regular deliveries in multiple locations. Such buyers have a strong preference for dealing with a single supplier that can satisfy all of their propane requirements.

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[3] This report ignores the use of propane as a feedstock to the petrochemical industry, as this is not a segment served by the parties.

Table 1
Propane Use by Segment (circa 1995)[4]

	Millions of Litres	Percent
Total Residential	**483**	**14.0%**
House Heating	362	10.5%
Auxiliary Heating	90	2.6%
Appliances	32	0.9%
Total Commercial	**536**	**15.6%**
Commercial Heating	331	9.6%
Food Services	205	6.0%
Total Agriculture	**333**	**9.7%**
Brooding	166	4.8%
Crop Drying	149	4.3%
Tobacco Curing	17	0.5%
Total Industrial	**850**	**24.7%**
Oil Pumps	230	6.7%
Mine Heat	218	6.3%
Forklift Truck	186	5.4%
Manufacturing	93	2.7%
Construction Heat	58	1.7%
Forestry	54	1.6%
Roofing	12	0.3%
Auto	**1,032**	**29.9%**

B. Alternative Fuels

The parties state that propane competes with a number of alternative fuels depending upon the application.[5] Table 2 (based upon the parties' submissions)

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[4] The table was derived from SPI's 1995-1996 Market Assessment documents. These assessments indicate SPI volumes by application for all applications, and they also provide estimates of total market volumes for most applications. However, for several applications (residential appliances, construction heat and roofing) total volumes were not provided. In those cases, the relative importance of these applications to SPI were used as proxies for these applications' share of total volumes. The sum of sub-segments does not always equal the segment total as some very minor applications were omitted. The total of all segments does not equal 100% because the "agent" category was omitted. Agents serve a very diverse clientele, including welding agents and "refill agents" who in turn market to the cottage and recreational industry for camping and cooking (see Superior Propane Income Fund, 1997 Annual Report, p. 8).

identifies a number of applications by segment and purported close substitutes for each application.[6] Fuel sources that are close substitutes for propane should be considered to compete in the same relevant product market with propane.

Table 2

Propane Uses and Potential Substitutes[7]

PROPANE USES	Natural Gas	Elec-tricity	Fuel Oil	Diesel	Gaso-line
Residential					
Space heating	x	x	x		
Water heating	x	x	x		
Cooking	x	x			
Clothes drying	x	x			
Lighting	x	x			
Refrigeration	x	x			
Commercial					
Space heating	x	x	x		
Water heating	x	x	x		
Pool heating	x	x			
Fuel for Stationary Engines	x	x	x		
Cooking	x	x	x		
Laundry	x	x	x		
Refrigeration	x	x	x		

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5 This was the same position taken by the merging parties before the Restrictive Trade Practices Commission in the 1960s. "Counsel for Great Northern and Rockgas submitted at the hearing before the Commission that propane distribution was not in itself a class or species of business, but a segment of the business of fuel distribution. He submitted that the 'market' in relation to which the power of control of Rockgas and Great Northern should be measured was the market for fuel, where propane must seek customers in competition with natural gas, oil, coal, wood and electricity." RTPC, *Monopoly in Distribution of Propane - British Columbia* (Ottawa: Queen's Printer, 1965) p. 64. As will be discussed presently, the RTPC rejected this position.

6 We have omitted wood as an alternate fuel as it is inappropriate for most applications.

7 Adopted from Davies, Ward and Beck, *Submission to the DIR Regarding the Proposed Acquisition of ICG Propane Inc. by Superior Propane Inc.*, August 4, 1998, Tables 2-6. Cells marked with an "x" indicate, according to Superior Propane, competition from competing fuels.

Table 2 (continued)

PROPANE USES	Natural Gas	Elec-tricity	Fuel Oil	Diesel	Gaso-line
Industrial					
Steel cutting	x				
Soldering	x				
Glass melting	x		x		
Heat treating	x	x	x		
Space heating	x	x	x		
Water heating	x	x	x		
Process heat	x	x	x		
Aggregate and materials drying	x	x	x	x	
Portable heating & lighting	x	x			
Asphalt heating	x		x		
Construction heating	x				
Forklift truck fuel	x	x	x	x	x
Stationary engine fuel	x	x	x	x	
Agriculture					
Crop drying	x				
Irrigation	x	x			
Brooding	x	x			
Space heating	x	x	x		
Water heating	x	x	x		
Stock tank heating	x	x			
Greenhouse heating	x				
Tobacco curing	x				
Flame weeding	x				
Waste incineration	x	x	x		
Fuel for machinery	x	x		x	x
Heat outbuildings	x	x	x		
Automotive	x			x	x

1. Statistical Analysis

When reliable data are available and permit econometric estimation, economists evaluate the availability and nature of substitution among products with reference to the "own-price" and "cross-price" elasticities of demand estimated for each product. Own-price elasticity measures the percentage change in the quantity demanded of a product divided by the percentage change in the price of that product. Generally, a high own-price elasticity (e.g., a small percentage increase in price leads to a large percentage decline in quantity demanded) suggests that there are good substitutes for the product. Cross-price elasticity measures the percentage change in the quantity demanded of one product divided by the percent change in the price of another product. When cross-price

elasticities are high and positive (e.g., when a small price increase for one product triggers a large increase in demand for another) this is evidence that the two products are substitutes.

Unfortunately, a literature search revealed no statistical studies of propane demand from which estimates of own-price and cross-price elasticities of demand could be directly inferred.

Several studies were identified concerning the willingness of consumers to switch from natural gas to alternate fuels. One statistical study focuses on inter-fuel substitution behaviour for space heating. It supports the hypothesis that inter-fuel substitution for residential space-heating is likely to be quite weak in the short-run, since the heating infrastructure (e.g., furnaces) of the existing stock of housing is the primary factor influencing short-run fuel choices, and since new housing flows are small compared to the stock of existing housing. [8]

A second empirical study focuses on inter-fuel substitutability among different types of users in Ontario, Quebec and British Columbia. [9] The study finds that the requirement for substantial modifications of the relevant equipment on the user's premises is a substantial impediment to inter-fuel substitutability. In particular, conversions away from natural gas to alternate fuels would, in many cases, be both slow in occurring and would require a significant and permanent change in relative fuel prices.

The only statistical analysis provided by the parties is an internal ICG study that deals, in part, with the correlation of the retail price of propane with ICG's volumes sold over the period 1990-1996. Over all market segments and time periods, only two segment/time periods (out of a total of 18) showed a statistically significant relationship between price and volumes, and both were for the residential segment. The relationship was positive (i.e., higher prices were associated with higher volumes sold).[10]

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8 See, for example, Wen S. Chern and William W. Lin, "Energy Demand for Space Heating in the United States", in G. S. Maddala, W. S. Chern and G. S. Gill, *Econometric Studies in Energy Demand and Supply*, New York: Praeger Publishers, 1978, pp. 60-74. Clearly, the propensity to switch fuels will depend in part on the replacement pattern for the fuel using equipment. In the case of residential space heating, the relevant equipment is, of course, the furnace. Generally furnaces have a fairly long life-expectancy (i.e., in the range of 15-20 years).

9 Henley International Inc., "A Study of Fuel Switching and Factors Affecting Fuel Substitution", Report Prepared for the National Energy Board, October 25, 1996, mimeo.

10 John Miller and Gary St. Jean, "Propane Supply Pricing 1990-1996," mimeo, January 1997, p. 33. The authors of the study acknowledge that other relevant variables have been excluded from their analysis which may bias their finding with respect to the relationship between price and volumes. However, taken at face value, the results suggest that most residential customers do not respond to changes in ICG's propane prices.

In short, available statistical evidence focusing on natural gas usage suggests that the need to adapt or replace fuel-burning equipment acts as a significant impediment to inter-fuel substitutability. We are unaware of any compelling reason why such findings are not also applicable to propane usage. Indeed, in a later section, we offer some evidence on the costs associated with switching away from propane to alternative fuels.

2. Application of Other Evaluative Criteria by Market Segment

A number of other criteria for identifying the relevant product market are identified in the Merger Enforcement Guidelines (MEGS).[11] They include:

- *Views, Strategies, Behaviour and Identity of Buyers* The opinions, as well as the behaviour, of customers provide a potentially important source of information about the degree to which different fuels are considered close substitutes by buyers.

- *Trade Views, Strategies and Behaviour* The opinions of propane suppliers and other industry participants offer another perspective on inter-fuel substitutability. The behaviour of propane companies would provide additional insight into which alternative fuel sources are seen as being close substitutes under specific conditions.

- *End Use* Functional interchangeability in end use is a necessary condition for two products to be considered close substitutes. However, it is not a sufficient condition in that specific attributes of one product might set it apart from another, notwithstanding the fact that both broadly satisfy the same end use.

- *Physical and Technical Characteristics* Differences in physical and technical characteristics may contribute to imperfect substitutability across products. In general, the greater the value that buyers place on the actual or perceived unique physical or technical characteristics of a product, the more likely it is that the product belongs to a distinct relevant product market.

- *Switching Costs* The advantages and disadvantages of alternative fuels are presumably evaluated relative to the differences in relative prices. Thus, if the price of fuel A increased sufficiently relative to fuel B, it would, at some point, encourage some users of fuel A to switch to fuel B, even though the former has more desirable physical and technical properties than the latter. The more marked are the differences

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[11] Director of Investigation and Research, *Merger Enforcement Guidelines*, Ottawa: Minister of Supply and Services Canada, March 1991, pp. 10-14. These indicia are recognized in the economics literature (see for example, Douglas Greer, *Industrial Organization and Policy*, 3rd ed., MacMillan: New York, 1992, p.272) and in Canadian jurisprudence (see for example, *J.W. Mills & Sons Ltd. v. The Queen*, 1968; and *Director of Investigation and Research v. Southam Inc. et al.*, 1997).

in those properties, the greater are the required increases in the relative price of fuel A to encourage significant switching of consumption into fuel B. Also relevant are the costs of switching. Specifically, the use of fuel B may require infrastructure and knowledge different from fuel A. Therefore, current users of fuel A may be required to make additional expenditures in order to utilize fuel B. The larger these additional expenditures, known as switching costs, the larger the relative increase in the price of fuel A required to encourage substantial switching to fuel B.

- *Price Relationships and Relative Price Levels* The absence of a strong correlation in price movements between two products over a significant period of time generally suggests that the products are not in the same relevant market.[12] On the other hand, a high correlation in the price movements of two products often indicates significant competition between these products. The problem with inferring close substitutability from a high correlation of price movements is that the correlation can be due to other factors such as price changes in common inputs or general inflation.

As reflected in Tables 1 and 2, propane is used in very diverse applications. The technical ability to, and net economic benefits of, utilizing alternative fuels vary across applications. In order to make the application of the evaluative criteria manageable we focus on major product market segments and sub-segments.

Before doing so, the relevance of looking at individual segments should be further considered. In particular, if price arbitrage is possible across segments, differences across segments in the degree of competition provided by alternative fuels would not be relevant to pricing behaviour in each segment. Specifically, the price established in the most competitive segment would condition the prices established in other segments. On the other hand, if price arbitrage is significantly impeded by industry practices (such as suppliers owning customer tanks or exclusive supply contracts) or the physical characteristics of the product (propane must be transported in pressurized vessels) different price-cost markups can persist in different customer segments.

Available evidence indicates highly imperfect price arbitrage across customer segments and even across customers within segments. Put simply, prices differ significantly between customers in different segments and between customers within the same segment.

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12 Director of Investigation and Research, *Merger Enforcement Guidelines*, *op. cit.*, p. 12.

a. Residential

Residential applications account for about 14% of propane consumption (see Table 1), and of these, house heating and auxiliary house heating account for most of the usage. Appliances, such as water heaters, dryers and ranges, consume relatively modest amounts of this fuel.[13]

With respect to space heating, alternative fuels used include natural gas, electricity and heating oil. When households have access to natural gas, the latter will usually displace propane use. However, this is not universally true. For example, depending upon the amount of fuel used, switching costs might deter conversion. It is true that equipment designed for either natural gas or propane gas is fundamentally the same.[14] Hence most propane appliances can be readily converted to natural gas. However, in residential households where the piping from the outside of the house to the furnace is sized for propane and not for natural gas, conversion costs can be quit high. Furthermore, in situations where the residence is located far from the road (and the gas line), the costs of bringing gas in can be considerable. Presumably, in some minority of cases (e.g., summer cottages) conversion costs would outweigh the benefits of switching. However, in most cases, conversion costs are modest. Indeed, propane distributors use this fact when marketing propane in areas where extension of the gas mains is anticipated. They make the point that propane appliances can easily be converted once natural gas arrives.[15]

Given the general preference of customers for natural gas, an analysis of alternate fuels should focus on subgroups of residential customers who do not have access to natural gas. In these cases, the most likely substitutes are electricity and heating oil.

It is also true that electricity represents a reasonable substitute for propane in most space heating applications. When electricity is available, and when it is priced competitively relative to propane, it will often displace propane for space heating

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13 In Table 1, the distinction between house heating and appliances is not clear-cut. Apparently the house heating category includes accounts that use propane to fuel residential furnaces and other appliances. The appliance category refers to accounts that use propane only for appliances (i.e., not for house heating). As a result, the appliance category understates the relative importance of this application.

14 (www.propane.ca/comind/comuses.html) and (www.commonwealthpropane.com/info.html) (1/11/98).

15 See: the SPI document titled "When it Counts Most, Count on Superior Propane;" and ICG's answer to Undertaking # 176.

applications.[16] However, at this time and into the foreseeable future, the price of electricity is so high relative to propane in several parts of the country, that it is an unlikely substitute. The price of electricity, relative to propane, is shown in Table 3. Clearly, price differentials in Ontario, Manitoba, Saskatchewan and Alberta are so great that it is unlikely that substitution of electricity for propane would mitigate a significant, non-transitory increase in the price of propane.

Table 3
Relative Prices of Alternate Fuels[17]
(BTU basis, space heating application)

	Electricity	Fuel Oil	Propane
Newfoundland	109%	81%	100%
New Brunswick/ PEI	89%	69%	100%
Nova Scotia	130%	65%	100%
Quebec	103%	68%	100%
Ontario	158%	81%	100%
Man/Sask	136%	110%	100%
Alberta	194%	126%	100%
British Columbia	98%	91%	100%

Heating oil is another matter. In the recent past, heating oil, on a BTU basis, has been lower priced than propane in most parts of Canada (the Prairie provinces are the exception). The fact that residential consumers continue to use propane is explained in part by the non-price attributes of the two fuels. These non-price attributes are listed in an SPI document:

> The selection of a heating fuel is influenced by many factors, such as:
>
> - Reliability of supply, and long term availability,
> - Cleanliness in the home and in the environment,
> - Smell,
> - Convenience and ease of use,
> - Storage requirements and available space,

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16 Electricity is inferior to propane with respect to supply security. Electric power outages are more common than propane shortages. Indeed, propane distributors capitalized on the widespread outages in Quebec and Eastern Ontario during the ice storm of 1998 by promoting their product as a secure auxiliary heat source.

17 See Davies, Ward and Beck, *Submission to the DIR Regarding the Proposed Acquisition of ICG Propane Inc. by Superior Propane Inc.*, August 4, 1998, Appendix 13. The comparisons are based on utilization of lower efficiency oil and propane furnaces.

- Capital cost and efficiency of associated heating equipment,
- Current and expected future price.[18]

Presumably both heating oil and propane rank equally with respect to security of supply. Propane is clearly superior to oil with respect to cleanliness, environmental impacts and smell. Convenience, storage requirements and capital costs do not differ significantly between the two fuels. Nor are there significant differences in the capital costs or efficiencies of the heating equipment fired by these two fuels.

The consumer's knowledge of current prices and expectations of future prices also play a role in fuel choice.[19] This is of particular importance when considering the propensity to switch between fuels. Compared to the prices of natural gas and electricity (which are regulated in many jurisdictions), the prices of propane and heating oil are relatively volatile. Moreover, the price differential between these two fuels is also subject to considerable variation. As a result, a consumer contemplating switching from propane to oil on the basis of the current differential would have to attach a probability to the likelihood that the differential would persist. Clearly, the greater the differential and the greater the likelihood that it would persist, the more likely the consumer would switch. At issue is whether a material propane price increase, say 5%, would be enough to trigger this action.

We cannot quantify the probability of the persistence of price differentials nor the value that consumers attach to the non-price attributes of propane (although this value is real).[20] However, something can be said with regard to the costs of switching from propane to heating oil for residential space heating.

Our estimates of the costs of converting a residence in the Lower Mainland of British Columbia from a propane to an oil fired forced air furnace range from $4,500 to $5,300. Appendix 1 sets out the basis for these estimates. It also provides estimates of the increased costs for residential space heating that would result from different propane price increases. The results indicate that it would take very significant price increases to justify a switch to oil.

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18 SPI document titled "Superior Propane Inc., Marketing and Sales Plan, May 1996."

19 SPI documents indicate that its customers in the residential and commercial segments have little knowledge about comparative propane prices. One document states that "65-70% of our customers are not aware of competitors' prices" (memorandum from J. Cooper to G. Mackey, Topic: Eastern Operations September 1997 Operating Report, October 6, 1997), another independently prepared marketing report states that "customers' awareness of the specific cent per litre price is low" (Canada Market Research Ltd. report titled "Defining Pricing Strategy in the Context of Customer Value Analysis -Commercial and Residential Markets," October, 1997).

20 See the report prepared for SPI by OSI Technology Marketing Research Group titled "Quantitative Research Into Residential Heating Equipment & Auxiliary Appliances Markets," June 25, 1998.

To this point the discussion has focused on space heating. The issue of switching becomes more complex when the residential customer uses propane for multiple applications. For example, households commonly use propane to fuel furnaces, hot water heaters, clothes dryers, kitchen ranges, and gas fireplaces. As noted in Table 2, electricity can serve all of these applications. However, it is an imperfect substitute in some cases. For example, compared to propane, electric hot water heaters have a slower return, and this is a disadvantage when large volumes of hot water are required. Fuel oil cannot serve all of these applications. A customer with multiple applications wishing to switch completely away from propane would be faced with appliance replacement and significant alterations to the electric service. For example, the range and clothes dryer would likely be replaced with electric appliances (which would require internal rewiring and, perhaps, upgraded service to the home). The hot water heater could be replaced with either an oil or electric appliance, the gas fireplace would be unusable and irreplaceable. Of course the consumer could choose to use oil for space heating and propane for the remaining appliances. This would obviously require space to store both fuels.

b. Commercial

The commercial market segment consumes about the same total volume of propane as does the residential segment (see Table 1). About two-thirds of commercial use is attributable to space heating with food services accounting for about one-third.

space heating

Most of the issues addressed with respect to residential space heating also apply to commercial space heating. Again it is very difficult to generalize about the importance users place on the non-price attributes of propane relative to heating oil. For example, a resort or golf course might put an extremely high value on the aesthetic qualities of propane while other users would attach no importance to these characteristics.

With respect to switching costs, residential and commercial heating applications differ in one important dimension. Commercial users consume, on average, significantly more fuel than residential users for space heating applications. Since the price of space heating equipment does not increase in step with heating capacity, it is likely that commercial users would be willing to switch fuels at lower differentials than would residential users.

Appendix 1 provides estimates of the increased costs for commercial space heating that would result from different propane price increases. Costs per installation are considerably higher than for residential installations because average consumption is much higher (approximately two and a half times higher). Nevertheless, the analysis of

Appendix 1 indicates that based upon the cost of converting a residence to heating oil, propane prices would have to increase dramatically before switching would make sense for commercial users.

food services

Commercial food services account for a substantial proportion of total propane demand (about 6%). While food service operations clearly can use propane in multiple applications (e.g., water heating, cooking, clothes drying) it is likely that the fuel choice is predicated upon the preferences of chefs. In this regard, the natural gas industry references a survey indicating that 97% of chefs prefer to cook with natural gas. The most frequently cited reasons were temperature control, speed of cooking, cost and efficiency.[21] These same characteristics are advantages when comparing propane to electricity as a fuel source for cooking.

c. Agriculture

The agriculture segment accounts for nearly 10% of propane consumption in Canada (see Table 1). About half of this is attributable to crop and tobacco drying and the other half to brooding. The evidence is clear that kerosene and fuel oil are not substitutes for natural gas or propane in these applications. For example, an SPI document states that:

> Agricultural--propane competes primarily with electricity. Fuel oil is not "clean" enough to be used as a source of heat for corn/grain drying and for keeping chickens and pigs warm (commonly known as brooding).[22]

crop drying

A frequently made point is that propane is North America's number one energy source for crop drying because it is clean-burning, non-toxic, insoluble in water and will not contaminate crops. By contrast, kerosene or fuel oil burners may leave an odour on the grain.[23] Propane crop drying systems are also widely used because of the simplicity of the required equipment, which contributes to low capital, fuel and maintenance costs.[24]

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21 See Gas Industry Online (www.aga.com/gio/ngapps.thml) (1/8/99).

22 SPI document titled "Overview of Alternative Fuels."

23 See, for example, the web page of SASK AG and Food (www.gov.ska.ca/agfood/crops/grdryfeq.htm).

24 See (www.propane.ca/agric.html).

It is worth noting that even when the farm is in proximity to the natural gas grid, it may not be economical to make the connection. First, it is obviously costly to make an initial connection to the pipeline grid, particularly when the home site and outbuildings are far off-road. Second, even if the residence is connected to the grid, service may not be big enough for grain drying, and it is costly to switch the size of pipe.[25] Third, grain drying may be carried out some distance from the residence, in which case additional piping would have to be installed. Finally, in many locations the need for substantial crop drying is episodic, depending upon the weather (weather conditions influence the size of the crop and its moisture content, both of which influence propane requirements). Farmers are reluctant to make the necessary investment in natural gas drying capabilities given this pattern of use.

Electricity is an alternative to both propane and natural gas for crop drying. However, heavy-duty electricity is needed to run high capacity dryers. The associated operating costs are higher than for natural gas or propane. In addition, high voltage lines must be installed.

brooding

A somewhat different set of circumstances characterizes poultry and livestock brooding. Fuel requirements for these applications are ongoing, not episodic as with crop drying. Presumably, a brooding operation with economical access to natural gas would be connected to the grid. Absent natural gas, the only real alternative is electric heating. However, this fuel scores poorly in the critical dimension of supply security. In the event of a power failure, an electricity-dependent brooding operation would stand to lose the entire brood.[26] Further, in contemplating a switch to electricity the operator would have to consider the cost of electricity relative to propane and the cost of infrastructure. Conversion would require heavy-duty electric service onto the farm, appropriate wiring in the brooding barns, and the electrical heaters.

d. Industrial

Arguably, the industrial market segment encompasses more diverse applications than any other segment. The category includes applications ranging from heat, to transportation, to materials cutting.

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[25] An Imperial Oil market assessment document indicates that even when grain farmers are on the natural gas grid, there are still problems that impede switching. For example, residential lines running to the farm dwelling are often too small for agricultural use and there might be a poor gas flow due to the number of customers on the line. Document titled "Farm/Commercial Propane Business Opportunity - Market Assessment," DMC:ad, 4/29/92.

[26] Commonly, poultry operations dependent upon electricity for non-heat applications (e.g., ventilation) maintain on-site generators to protect their flocks in the event of electric power outages.

oil and gas activities

Propane has multiple applications in the oil patch. Many of the applications involve remote oil wells that are distant from both the natural gas and electricity grid. These uses would include conventional space heating, and fueling heating "treaters" and the generators that power oil pump jacks. Generally this latter application is temporary to get wells up and running quickly. After one or two years, if the well proves productive and electricity is economically available, power lines are brought in. In this case, propane enjoys a niche in the early exploratory drilling activity. Propane is the preferred fuel for these oil patch activities. Many of the sites are unmanned and thus a premium is attached to low maintenance, highly reliable equipment. These are attributes of propane fueled heaters and generator sets.

With respect to substitutes, some wells generate casing gas which can be used as fuel. For others, the only viable alternative is diesel fuel. Switching to diesel would require a change in infrastructure, and often the building of berms around the fuel tank in order to contain spills.

mine heat and forestry

Industrial mines require fuel sources for heat and for powering equipment. The lower emissions associated with propane are critical for some applications, particularly mine heat. Mining operations also use propane for process heat and for more generic purposes such as space heating, running generators, fueling forklift trucks, cooking and the like. In addition to the emissions advantage, propane is preferred to oil because of its more limited space requirements and the lower environmental risk associated with its use. In regard to this latter point, increasingly rigorous environmental standards have increased the cost of using oil because oil tanks have to be secured in order to protect against leakage and subsequent soil and water pollution. For example, berms might be required in order to contain a spill. Mines currently using propane would face very significant costs in altering their infrastructure to accommodate an alternate fuel.[27]

Propane is used in multiple applications in the forestry sector. At sawmills and planing mills it might be used for forklift trucks, space heat and process heat (e.g., kiln dryers). In such cases, the feasibility of substituting other fuels will be application specific. Forest companies also use propane in remote logging camps for heating, cooking and, for those off the electricity grid, for power generation. In these cases, substitutability would be highly application specific.

forklift trucks

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[27] Richard Schwindt's interview with Garry Biles of Homestake-Eskey Creek (April 20,1999). The mine in question is off the natural gas and electricity grids, which, of course, is not unusual for metal mining operations.

According to James Mitchell, director of value-added programs at Impco Technologies, internal combustion models account for 64 percent of the North American forklift market, and propane models make up about 93.5 percent of this total.[28] As noted in Table 2, forklift trucks can operate on diesel fuel or gasoline. Commonly larger trucks committed to outside work (e.g., lumberyards) use these fuels.

For indoor work (e.g., warehouses) emissions are a critical issue. Indeed, in many jurisdictions indoor emissions standards are set by regulation (e.g., Workers Compensation Board regulations), and these standards preclude the use of diesel fuel or gasoline powered machines. For indoor use, propane competes with compressed natural gas and electricity.

Relatively little information is available on compressed natural gas-fueled forklift trucks. Apparently this is a fairly new technology and not widely diffused. Undoubtedly one of the factors impeding diffusion is the high cost of on-site compressors. More relevant is competition between propane and electrically powered trucks.

There are several technical characteristics that differentiate propane and electric machines.[29] First, electric machines must be recharged which, to date, is slow.[30] This limits the working time of the machine unless the operator invests in supplemental batteries. Batteries are quite expensive, costing between $4,000 and $5,000. The need to recharge batteries makes propane trucks ideal for operations where there is often overtime or peak season work requiring longer hours. Second, electric trucks tend to lose their charge more rapidly when climbing steep ramps or grades on a regular basis. Propane trucks, which can produce higher torque, have the ability to climb grades more easily. Third, electric trucks can develop problems when working in areas with excessive moisture (e.g., when moving between indoor and rainy outdoor environments). Fourth, propane trucks are generally more efficient in cold conditions. Fifth, electric-powered narrow-aisle trucks, due to a tighter turning radius, tend to operate more efficiently than propane trucks in confined areas. Sixth, regulations prohibit the use of any internal combustion forklift trucks in some environments (e.g., food handling).

This recitation of technical characteristics indicates that in some applications, electric trucks are poor substitutes for propane fueled machines (e.g., a workplace with steep grades, long hours, excessive moisture, or cold conditions) and in others (e.g., food

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28 As reported at the following web site: www.bpnews.com/htmlfile/otherhtm/nov98/1198003html.

29 A detailed comparison of alternatively fueled forklifts that amplifies these and other differences is found on the Toyota website (www.forklift.toyota.ca/english/decideE/13310E.html).

30 This point is made by E. J. Shaw, logistics manager for Focus Direct, a Texas-based company that uses numerous forklifts. Shaw also notes that fast-charging battery technology might mitigate this disadvantage in the future (www.bpnews.com/htmlfile/otherhtm/nov98/1198003html).

handling) the opposite is true. As was the case with other applications, we are not in a position to judge the importance of these non-price product attributes. But again, as in other applications, we can say something about the switching costs.

The switch would require the replacement of the propane vehicle because machines cannot be converted from propane to electricity. A review of the attractiveness of switching from propane to electric trucks under different propane price assumptions is set out in Appendix 1. The results indicate that significant switching, even in the face of substantial propane price increases, would be unlikely in the short term.[31]

Manufacturing

This market segment, which accounts for about 3% of propane consumption, comprises the most heterogeneous set of applications. These uses include steel cutting and soldering, for which there are no good substitutes for propane, and others, such as space or process heating for which there might be good alternate fuels. We do not know the relative importance of these diverse applications within the manufacturing segment. However, commonsense would indicate that energy intensive manufacturing operations would locate in proximity to economical energy sources. It follows that when propane is chosen for manufacturing applications it is because there are no good substitutes readily available.

Construction Heat

Mobility considerations make propane a preferred energy source in construction and concrete drying activities. It is true that temporary (and economical) natural gas connections can be made to construction sites under some conditions. For example, in the case of office and apartment buildings that will ultimately be heated by natural gas, temporary construction heat requirements can be substantial and a temporary connection might be justified. However, there are factors that impede the use of natural gas. For example, attempts to make natural gas immediately available for construction heat can disrupt the normal sequence of building activities, causing delays. Also, because this practice is fairly recent, natural gas construction heaters are not everywhere available. Contractors commonly rent construction heaters from propane cylinder distributors or industrial equipment rental businesses. Obviously the former are interested in selling propane and would be unlikely to supply natural gas heaters. The latter have inventories of propane heaters and presumably would need time to convert or replace these with natural gas compatible equipment. In sum, we believe that propane enjoys a significant "mobility" advantage over natural gas.

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[31] Obviously, switching becomes more economically relevant at the time that equipment must be replaced. Our understanding is that the life-expectancy of a forklift truck is quite long (often more than 10 years depending upon the intensity of use).

As compared to heating oil, a 1981 study of propane use in Quebec noted that while propane is more expensive than oil in Quebec, contractors prefer propane to heat construction sites as this does not leave residue on building materials.[32]

e. Automobiles

The automobile propane market segment is the single largest user of propane, accounting for about 30% of total consumption. According to the Propane Gas Association of Canada there were approximately 135,000 propane-powered motor vehicles in Canada in 1998.[33]

In the case of auto-propane, the substitutability of alternate fuels, namely gasoline, depends upon whether the vehicle is dual-fuel or dedicated to propane as well as the price of gasoline relative to propane. Dual-fuel (gasoline/propane) vehicles can easily switch from one fuel to another, although these vehicles are apparently not as efficient as single-fuel vehicles. It is not known with certainty what percentage of the population of propane fueled vehicles is dual-fuel. An Imperial Oil document suggests that in the early 1990s, in British Columbia, 95% of conversions to propane were commercial vehicles, and nearly all were "propane dedicated versus dual-fuel."[34] However, we understand that more recently as fuel injection systems have replaced conventional carburetors, dual-fuel conversions have become more practicable. In any case, there are no current data that identify what proportion of the extant propane fueled fleet is dual-fuel and what proportion is mono-fuel. The latter class of vehicles is locked into propane for the life of the vehicle as there are no substitutes (substituting compressed natural gas for propane is evidently not practicable).[35]

For dual-fuel vehicles, substitution away from propane to gasoline will depend upon the relative price relationship between the fuels. In the provinces of Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia, propane was cheaper than gasoline (on an energy-adjusted basis) over the first four months of 1999.[36] For

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32 Sencor Inc., "The Propane Gas Market in Quebec," report prepared for Esso Resources Canada Ltd., Final Report, October 30, 1981, p. 40.

33 Propane Gas Association of Canada Inc., "Canadian Propane Industry Statistical Review in Brief - June 1998," p. 17.

34 Imperial Oil document, Memorandum from C. F. Barraclough to W. J. McAdam and R. W. Hamilton, titled "B.C. Retail Division/Superior Discussions," February 3, 1992, p. 2.

35 Problems with compressed natural gas in automobile applications include slow fueling, few commercial refueling outlets, and lack of range for the vehicle.

36 We have chosen the first 4 months of 1999 to show the current relative prices. A review of energy adjusted relative prices over the past ten years indicates that the relationships have remained relatively stable. If anything, propane's advantage *vis a vis* gasoline has eroded.

example, the price of propane was 95 percent of the gasoline price in Quebec and Saskatchewan, around 74 percent of the gasoline price in Ontario and Alberta, and about 87 percent of the gasoline price in British Columbia. The majority of propane fueled vehicles are in these latter three provinces. These price relationships suggest that propane companies have the scope to significantly increase propane prices to some dual-fuel vehicle users without triggering a switch to gasoline.

3. Application of the Evaluative Criteria: Generalizations

While many of the evaluative criteria are most productively applied on an application specific basis, some generalizations that cut across applications can be made. We turn to these now.

a. Trade Views, Strategies and Behaviour: the Parties

Of significant importance is the view of industry participants as to the substitutability of alternate fuels. There is no doubt that the documentation provided by the parties contains numerous references to competition from alternate fuels. However, the documents contain scant evidence that the parties adopted strategies to counteract competition from alternate fuels. More specifically, one would expect to find evidence of pricing strategies framed to meet competition from alternate fuels. SPI sets price to its branches based upon the relevant commodity price (i.e., the price at the relevant supply location) and the cost of transporting the fuel to the local branch. The branch in turn sets the price to the ultimate user. SPI contends that the prices of alternative fuels play a role in retail pricing at the branch level. Notwithstanding SPI's contention, a review of documents generated by its branches provides little evidence that the prices of alternate fuels were explicitly factored into pricing decisions. What one would look for in this regard are multiple instances where the branch manager altered propane prices in response to competition from other fuels. With respect to ICG, prices are set at the regional level (i.e., at the C3 level). Again, there is scant evidence that ICG explicitly responded to changes in prices of other fuels with changes to its propane prices.

In this regard, one would also expect to find evidence of accounts lost to, or gained from alternate fuels as relative prices fluctuated. A review of documents dealing with "won and lost" accounts reveals that a substantial number of accounts were lost to natural gas as the grid expanded. However, there are relatively few examples of accounts lost to other alternate fuels. For example, an SPI document which tracks lost accounts for the Smithville CSC from January 1996 to mid-January 1997 shows 196 losses, and identifies the reason for the loss in 188 cases. Switches to natural gas account for 56% of the losses, switches to heating oil for 2.7%, switches to electricity for 0.5%, switches to competing propane distributors for 0.5% and other reasons (e.g., arrears, house

demolition, and new owners) for 40%.[37] A 1993 SPI memorandum indicates that in the Ontario region, from mid-April through the end of October 1993, 1,600 accounts were lost to alternate fuels. Of these, the actual reason for the loss was identified in only 50% of the cases (the author of the memo suggests that many of the unidentified lost accounts were companies going out of business, homes demolished, and people moving away). Of the total, natural gas accounted for 23% of the losses, electricity for 6%, oil for 3%, wood for 2% and other reasons (arrears, lack of interest in pool heating) for 14%.[38] Another SPI document shows a total of 438 lost accounts for the Nanaimo branch for the period 1993 to 1998. Of these, switches to natural gas accounted for 72%, switches to oil for 1%, switches to electricity for 3%, switches to wood for 1%, switches to competing propane distributors for 18%, and other reasons for 6%. Admittedly this review is not systematic. Unfortunately the documents do not allow for a comprehensive analysis of accounts lost to alternate fuels.[39] Nonetheless, what evidence there is suggests that propane customers do switch to natural gas when it is available but that there is relatively little switching to any other fuel.

b. Trade Views, Strategies and Behaviour: Other Sources

A broad overview of alternatives available to commercial and industrial propane users is provided by the propane industry through its website. The website states that commercial and industrial customers in Canada have a choice of several types of available fuels; however, from a practical standpoint, only propane gas, natural gas and electricity are viable options to satisfy all applications.[40] Specifically, while fuel oil can be used fairly efficiently for space heating, it is impractical in just about any other application, such as water heating or cooking, and cannot be used for clothes drying or air conditioning. It can also do considerable damage to the environment. The website also notes disadvantages of electricity and natural gas. One of the most critical drawbacks of electricity is its inability to provide cost-effective energy when it's needed most (risk of brownouts and blackouts). Natural gas is economical and efficient to use. It is also clean-burning; however, it is not portable from any practical standpoint.

An U.S. government document makes a stronger statement about the imperfect substitutability across alternative fuels.[41] Specifically, it argues that demand for propane is relatively inflexible. In particular, residential/commercial and agricultural demands are largely determined by weather, and little fuel-switching capability exists.

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37 SPI document titled "Lost Accounts - Smithville CSC."

38 Memo from David Little to John Cooper, November 22, 1993.

39 SPI states that it does not have a standard practice or format for collecting customer gains and losses information at its branches (SPI answer to Undertaking #67).

40 See www.propane.ca/comind/select.html(1/18/99).

41 Energy Information Administration, *An Analysis of U.S. Propane Markets*, Winter 1996-97, mimeo, Washington, D.C.: June 1997.

c. Price Relationships and Relative Price Levels

As noted earlier, correlations in price movements can provide information on whether products are in the same relevant product market. Evidence that prices do not move together indicates that products are not close substitutes. However, evidence of a strong correlation does not unambiguously support the conclusion that two products are in the same product market. This is because the correlation might be explained by changes in the prices of common inputs or by general inflation. Such spurious correlation is apparently especially problematical when correlating propane and heating oil prices. A report by the Energy Information Administration argues that the correlation between propane and heating oil prices is not due to propane/heating oil substitution, of which there is little in the short run.[42] The correlation results because movements in the price of both fuels are closely related to movements in crude oil prices.

4. Conclusions - Alternative Fuels

Given the very diverse set of propane applications it is difficult to make all encompassing statements about the substitutability of alternate fuels. Nonetheless, some generalizations can be made. First, for heating applications, where portability is not an issue, natural gas and electricity are generally good substitutes for propane. Given current price differentials, natural gas, when available, will generally displace propane. However, this is not true with respect to electricity. In most parts of the country electricity is considerably more expensive than propane when used in heating applications. Moreover, switching costs can be significant. Second, heating oil is an imperfect substitute for propane in heating applications due to aesthetic, storage, emissions and switching costs considerations. Third, for carburation applications, gasoline or diesel can substitute for propane when the vehicle has dual-fuel capabilities and when emissions are not a concern. However, given current price differentials between propane and gasoline, there is scope for propane prices to increase without triggering wide-scale substitution away to gasoline.

Our preceding discussion therefore indicates that for all of the non-auto applications listed in Table 1, for most customers currently using propane for whatever reason (e.g., portability, emissions, and relative prices), alternative fuels are not close substitutes. It follows that, for those customers, propane distribution is a relevant product market for anti-trust purposes. For auto-propane, the largest single use category, substitutability is highly dependent upon the configuration of the existing vehicle stock (i.e., dual- versus mono-fuel). Unfortunately, we do not know that current configuration.

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[42] Energy Information Administration, *op. cit.*

Nevertheless, existing price differentials may keep the propane and gasoline markets segmented for many owners of dual-fuel vehicles as well.

An SPI document dealing with its "site swaps" with ICG, suggested that the transaction provided an opportunity to "test '2% energy' theory" on the Competition Bureau.[43] The parties have put forward the same "theory" in this case, arguing that propane occupies a small role in the larger energy product market. This is the same argument that was put to the RTPC in the early 1980s. Our findings are much the same as those of the RTPC.

> Every type of fuel can, in a general way, be said to be in competition with every other fuel. The most advantageous market for propane exists in areas where natural gas is not available, as a fuel for cooking, water heating and small space heating. Its most usual competition in this market is electricity. But the fact there exists an inter-industry competition between propane and electricity does not make them the "same class or species of business." They can certainly be "distinguished" from each other without difficulty.[44]

C. Conclusions - The Relevant Product Market

The preceding extensive discussion of supply-side and demand-side characteristics points to the existence of strong segmentation among suppliers and customers. Returning to the issue of whether this segmentation is strong enough to qualify segments as separate product markets, we believe that some segments might well so qualify. However, given the limited availability of data with respect to market structure by geographical market, application, and in some cases customer, it would not be possible to determine the differential effects of the merger on competitive conditions across more rigorously and narrowly defined product markets. Moreover, the analysis that follows would not be fundamentally altered by adopting a more refined product market definition.

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43 SPI document titled "SPI/ICG Site Swaps - Risks."

44 RTPC, *Monopoly in Distribution of Propane - British Columbia* (Ottawa: Queen's Printer, 1965) p. 65.

III. THE GEOGRAPHICAL MARKET

There appears to be unanimous agreement that the sale of propane to final users occurs in "local" markets. An analysis of the actual boundaries of those local markets in the case at hand was undertaken by Professor Douglas West. In what follows, we have relied upon Professor West's findings.[45]

IV. CHANGES IN MARKET SHARE

The relevant issues here are whether the proposed merger will lead to a significant increase in market share concentration, and whether the resulting increase in market concentration will result in a significant lessening of competition in the absence of other mitigating factors.

In the analysis that follows, we use market shares aggregated across all applications (i.e., the merged parties share of all propane distribution in a geographical market). As we noted earlier, there is some segmentation on the supply side of the market. It is also true that the parties tend to emphasize some applications over others (i.e., the more profitable ones). As a result, the merger will have different effects on market shares in different applications. Therefore our approach is likely to overstate the merged party's shares in some segments and understate them in others; however, the merged party's shares are sufficiently high across all applications that any biases induced by aggregation are unlikely to alter fundamentally the basic conclusion that we draw in this section, namely, that the merger will lead to a substantial increase in concentration in most relevant geographic markets.[46]

A. Increases in Market Share Concentration

Estimates of the market share implications of the merger in specific geographical markets are provided in the analysis done by Professor West. Dr. West discusses ~~70~~ 74 relevant geographical markets in which pre and post-merger market shares can be estimated. In all 70 cases, the resulting market share of the merged entity would be above the 35 percent "safe harbour" threshold. In 21 cases, competition would be completely or all but eliminated: specifically, the merged entity would enjoy between 90 and 100 percent of propane sales in the relevant geographical markets. In another 25 cases, the resulting market share held by SPI would be between 70 and 89 percent. In yet

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45 "Affidavit of Douglas West of August 17, 1999," in this matter.

46 In any case, available data do not readily permit an application-by-application identification of the shares of the merged party and its individual competitors.

another 16 markets, SPI's share would be between 60 and 69 percent. Hence, in the vast majority of relevant geographical markets, the merger would result in SPI assuming a dominant, or a monopoly or near monopoly position.

Clearly, the potential for anti-competitive effects is manifest in those markets in which SPI would enjoy a monopoly or near-monopoly. A fuller assessment of this potential would involve consideration of the nature of competition between the merging parties in those markets, as well as conditions of entry. These issues will be considered later in the report. In other markets in which SPI would enjoy a dominant market share, the potential for competition with other propane suppliers must be considered. A key consideration is whether other suppliers would find it in their economic interest to attempt to take customers away from SPI in the event that SPI increased its propane prices after the merger. While we will discuss this issue in more detail in a later section, we merely note at this point that price competition is more likely the larger the number of independent competitors and the more costly it is for the dominant firm to retaliate against competitors who win customers away from the dominant firm. A history of price competition between the majors and independents also suggests a greater likelihood that price competition will persist in the post-merger period

B. Interpreting Changes in Market Shares

Substantial changes in market share associated with a merger can affect competitive behaviour and the prices paid by consumers. One possibility is that the merged party will attain a significant degree of unilateral market power through the merger and will find it profitable to increase price. Unilateral competitive effects are usually associated with the creation of a dominant firm through a merger, and with mergers in differentiated product industries where the merging parties are firms that produce each other's next best substitute product.[47] In effect, the remaining competitive fringe is sufficiently small, or sufficiently differentiated from the merged party that potential losses of sales to the fringe, even in the event that the latter does not match the dominant firm's price increase, are insufficient to render a price increase by the dominant firm unprofitable. Absent *de novo* entry, the irrelevance to competition of a competitive fringe is clearly suggested in markets where SPI and ICG have been actively competing as duopolists or virtual duopolists.

Where a substantial competitive fringe will remain after the merger, the profitability of a price increase by the dominant firm might be significantly affected by

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[47] These potential consequences are thoroughly discussed in Andy Baziliauskas and Thomas Ross, "Lessening of Competition in Mergers Under the Competition Act: Unilateral and Interdependence Effects", University of British Columbia, Faculty of Commerce and Business Administration, July 9, 1999, mimeo.

subsequent pricing decisions by the fringe, especially if consumers view the output of fringe sellers as close substitutes for the output of the dominant firm. In this case the important issue is whether fringe sellers will match the price increase of the dominant firm or allow price differentials with the dominant firm to widen. Fringe firms will presumably be guided by their own profitability considerations.

One possibility is that fringe firms will find it unprofitable to allow price differentials with the dominant firm to widen because the expected incremental costs of supplying additional output are high relative to the expected incremental revenues. This possibility would be particularly relevant where fringe firms are operating at (or near) full capacity, and where relatively large sunk cost investments are required to facilitate increased sales. In this case, fringe competitors would likely find it profitable to match the higher price charged by the dominant firm, irrespective of the risk of the dominant firm "retaliating" against fringe competitors that did not raise price.

Another possibility is that the merger will lead to increased interdependence among firms so that following the price changes of the dominant firm is a more profitable strategy for remaining competitors than it was before the merger. One possibility in this regard is that a merger will increase the likelihood of competitive retaliation in the event of widening price differentials. In particular, a merger might make retaliation by the dominant firm a more credible possibility. For example, by eliminating a large competitor, the acquiring firm might be able to focus its retaliation upon a much smaller company. In this case, the cost of selectively meeting price competition will be lower for the acquiring firm than it would be if the acquired firm were still in the marketplace. Expectations of retaliatory price decreases by the dominant firm, in turn, could persuade the remaining firms in the market to follow the price increases initiated by the dominant firm.

Evaluation of the potential competitive consequences of a merger can, in some cases, be performed more precisely by the formal application of different models of inter-firm rivalry.[48] However, the reliable *ex ante* application of any specific model may require more information than is available. Moreover, historical experience may lead to no unambiguous conclusions about whether one particular model is typically more descriptive of market behaviour than another. Hence, we deem it advisable to take a pragmatic approach to the issue. Namely, we evaluate merger-induced changes in market characteristics with several plausible models of industry competition in mind. To the extent that the anticipated consequences of the merger are similar regardless of the precise model selected, it is not necessary to specify a formal theoretical model beforehand that may not be able to yield reliably precise outcome predictions in any case.

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[48] There are a number of potential models to choose from. For a representative discussion of different models of imperfect competition, see Oz Shy, *Industrial Organization: Theory and Applications*, Cambridge: The MIT Press, 1995.

C. Market Share Consequences of the Merger

As noted above, markets in which a merger would create a monopoly, or near-monopoly, clearly raise *prima facie* concerns about unilateral anti-competitive behaviour and consequences in the absence of relatively rapid and substantial *de novo* entry.

Professor West's evidence identifies sixteen geographical markets in which the merged entity's post-merger market share would be 95 percent or higher.[49] These markets are identified in Table 4, along with the pre-merger market shares of SPI and ICG and the combined market share. Both SPI and ICG enjoy substantial pre-merger market shares with the exception of the third market identified (Bancroft/Pembroke/Eganville) where ICG's market share was a relatively small 5 percent. For this market, it might be argued that SPI (with a 92 percent pre-merger market share) would gain relatively little additional unilateral market power through the merger.[50]

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[49] In one market (Sechelt-Powell River), SPI did not compete prior to the merger, although it acquired two ICG branches in the merger. Since the merger, *per se*, did not contribute to a monopoly position in this market, it is not included as part of the 16 markets identified above and is ignored for purposes of further analysis.

[50] To the extent that ICG is a vigorous competitor in this market, there could still be some reduction in competition especially for customers who find SPI the closest substitute to ICG. Moreover, to the extent that ICG is a more robust source of increased propane sales than remaining sellers (as we shall generally argue in a later section), the elimination of ICG as an independent competitor reduces potential future competition.

Table 4
Geographical Markets with Merger-to-Monopoly

Market	Pre-Merger SPI %	Pre-Merger ICG %	Post-Merger SPI %
Val d'Or[51]	74	23	97
Sept Iles/Baie Comeau	55	45	100
Bancroft/Pembroke/Eganville	92	5	97
Dryden/Fort Frances/Kenora/Ignace	47	52	99
Echo Bay/Sault Ste Marie	55	44	99
Hearst/Wawa/Manitouwadge/Marathon	43	53	96
Little Current/Sudbury	51	48	99
North Bay	81	16	97
Thunder Bay	46	54	100
Fort McMurray	32	67	99
Whitecourt	55	45	100
Burns Lake/Terrace/Smithers/Prince Rupert	62	37	99
Fort Nelson	44	56	100
Valemont	43	57	100
Watson Lake	25	75	100
Whitehorse	33	67	100

The monopoly or near-monopoly post-merger position of SPI in the markets identified suggests that the probability of a unilateral price increase is substantially increased by the merger in the absence of competition from alternative fuels, as described earlier, or substantial *de novo* entry.[52]

In an earlier section, we concluded that the degree to which propane competes with alternative fuels varies across applications and even across customers within applications. For example, vehicles equipped for dual-fuel use are easier to switch away from propane compared to those dedicated to propane use. Commercial and apartment buildings that have dual-fuel heating capacity are easier to convert from propane use than dedicated propane-using buildings. On the other hand, agricultural applications such as crop drying are largely reliant upon propane, as are many uses of forklift trucks. Food establishments without access to natural gas are highly reliant upon propane. Fuel price differentials may make switching uneconomical, even when physical switching costs are relatively low (e.g., dual-fuel automobiles). In short, some portion of customers for

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51 These shares are based on estimates of SPI and ICG's 1998 shares in New Liskeard only.

52 We consider the potential for *de novo* entry in a later section. The presumption is that SPI and ICG were not charging a joint profit-maximizing price before the merger.

virtually all applications of propane will find it economically unattractive to switch away from propane use to varying degrees.[53]

Every major application of propane with the exception of agriculture is identified by Professor West in each of the 16 markets listed in Table 4.[54] To be sure, for certain applications in specific markets, one or the other party to the merger does not report sales; however, we argued earlier that incumbent suppliers could redirect capacity use to serve a different segment of propane customer, *ceteris paribus*.[55] In particular, since both parties serve all segments when considering all 16 markets, it is plausible that either could expand into segments in specific markets that it did not serve were it profitable to do so. Hence, even where one or the other party to the merger does not have identifiable sales for a specific application, the merger has the effect of eliminating the primary potential competitor in the relevant geographical market.

1. Competition Between SPI and ICG

It might be argued that SPI and ICG were not actively competing prior to the merger, so that even in markets in which there is merger to monopoly, the merger will have little impact on post-merger behaviour.[56] That merger to monopoly is unlikely to have any competitive consequences is suspect on theoretical grounds. In particular, cooperative behaviour between oligopolists is often difficult to maintain, even when explicit collusion is being practiced. In the absence of explicit collusion, changes in demand and cost conditions often "destabilize" efforts to refrain from competition.[57] A merger eliminates the possibility that the pre-merger entities will compete, if even inadvertently.

One source of information about competition between ICG and SPI is ICG's "Qualitative Assessment of Opportunities" that was filled out for a number of its

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53 It goes without saying that natural gas will likely displace propane over time for heating and for running appliances when the customer is near the natural gas grid. We assume that, generally, if residential and commercial customers are still using propane, they do not have economical access to the natural gas grid. In many local areas, many people may not have economical access to natural gas even though others do.

54 Agricultural applications are identified in a subset of those markets.

55 This statement is particularly applicable to SPI and ICG.

56 In the limit, the parties might have been charging a joint profit maximizing price which would make any increased interdependence between them a moot point.

57 For a broad discussion of the ability of oligopolists to "coordinate" prices, see John Howard and William T. Stanbury, "Oligopoly Power, Co-ordination and Conscious Parallelism" in F. Mathewson, M. Tebilcock and M. Walker, eds., *The Law and Economics of Competition Policy*, Vancouver: The Fraser Institute, 1990, pp.219-294.

branches.[58] Among other questions, respondents were asked, "how would you categorize the competitive nature in the local market?" Respondents were not asked to identify specific competitors. However, focussing on those markets in which ICG and SPI were duopolists should indicate the degree of competition between the two. In answering the question, respondents were provided with the following scale; low, medium or high. For those geographical markets listed in Table 4 where responses to the question are available, the majority of answers indicate a low level of competition.

At issue then, is whether the "low" response can be taken to mean that there is no effective competition between the two. Other documents, relating to these specific duopolized markets, belie this interpretation.[59]

Documents pertaining to other geographical markets support the conclusion that SPI and ICG did compete on the basis of price. For example, a substantial number of ICG internal memos point to the existence of significant competition between SPI and ICG. Examples are as follows:

- An internal note dated September 10, 1996 in which the author states: "..it is clear that Superior Propane has targeted ICG's base load market. Our intelligence from the field also suggests that Superior is systematically contacting ICG's customers (in all segments) advising them that ICG's Transformation Strategy has them "leaving town" and that they are the logical alternative with local presence."[60]

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58 These questionnaires make up a part of ICG's "1999-2000 Business Plan."

59 For Sept-Iles see the Superior Propane Competitor Analysis (no date) that indicates that ICG is very active in the commercial market, selling appliances that do not allow for a high profit margin. For Pembroke see the SPI June 1998 Monthly Report that states that ICG keeps "picking away" at SPI accounts, taking a 6,000 litre account. For Echo Bay see the SPI May 1998 Monthly Report that states that ICG had taken a 180,000 litre account from SPI. ICG thwarted an attempt by SPI to increase price by 5 cpl to this customer. For Hearst see the SPI July 1998 Monthly Report that states that SPI has lost several accounts to ICG due to the latter's low pricing. For Little Current see the SPI Branch Business Plan dated May 4, 1998 that reports that ICG is very competitive when pricing large accounts. For Sudbury see the SPI Branch Business Plan dated February 18, 1998 that states that ICG is offering very competitive prices on large residential and commercial accounts. See also the SPI Sudbury March 1998 Monthly Report that states that ICG is approaching SPI's commercial accounts. For North Bay see the SPI Competitor Analysis that speaks of ICG's low pricing tactics. For Porcupine see the SPI Branch Business Plan dated February 20, 1998, which states that SPI attempted to "steal" an industrial account from ICG. For Fort McMurray see the SPI Highlights-Fort McMurray for September 1996 which states that SPI has shut ICG out of the Syncrude site. This listing of documents is by no means exhaustive.

60 Note from Greg Shoemaker to Dick Tatamiuk and others, Subject: Immediate Action/Sales Force, September 10, 1996.

- An internal note stating that "...we are under heavy attack by Superior. Whatever they have been told by their Head Office, it seems that in Eastern, they are doing as they wish. My representatives are doing all they can to maintain the margin but at what cost." The note goes on to provide price comparisons between ICG and SPI for a set of customers in which SPI is pricing below ICG.[61]

- An internal memo discussing tender results for the City of Stratford: "This is very typical of what we have seen of late from Superior. They have approached 4 of our customers over the last 2 weeks in the 60,000 – 140,000 litre range with prices that represent a very thin margin."[62]

The ICG memos suggest that the intensity of competition with SPI varied over time. For example, a memo written in May 1998 reviews Superior's competitive initiatives in different provinces and concludes that, while Superior has been bidding aggressively on government tenders and pursuing large commercial accounts and new business, it has not been aggressively pursuing ICG accounts.[63] Nevertheless, ICG still apparently felt that it needed a strategy to address competition from Superior. Thus, it is stated in a memo that:

> The view from my chair is that ICG does not have a national coordination process for managing competitive tactics relative to SPI. Partly due to the fact that there has been little need in the last year and partly due to new people learning the ropes. If anything, ICG has been the aggressor over the last few months. Is it time to consolidate our position and prepare for a "new phase" where balance becomes our goal?[64]

Moreover, it is reasonable to assume that the rationalization program undertaken by ICG prior to the planned merger, which promised significant cost savings, would have contributed an additional destabilizing force in the market. Indeed, the documents indicate that SPI attempted to capitalize on perceived negative elements of ICG's

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61 Note from Charles Delisle to Norm Estey, Subject: Competitive attacks by Superior, September 16, 1996.

62 Memo from Tom Murray to Norm Estey, Subject: City of Stratford Tender Results, December 6, 1996.

63 Memo from Jim Pitenis to General Manager, Sales Managers, Subject: Superior Competitive Posture, May 5, 1998.

64 Memo From Norm Estey to Cheryl Kristiansen, Subject: Superior Propane Activity, Date: June 29, 1998. In another memo at around the same time, the author states that he doesn't see Superior as being any more "responsible" than the Super Saves of the world. See Memo from Grant Robinson to Cheryl Kristiansen, Subject: Superior Propane, June 26, 1998.

transformation policy (e.g., the need to contact an "impersonal call center") in its efforts to obtain ICG customers.[65]

These sorts of documents suggest that, however desirable it was from ICG's perspective to halt competition between it and SPI, it could not count on this state of truce as part of its business strategy. Hence, it spent resources monitoring SPI's pricing behaviour, as well as SPI's acquisition of tanks and collective bargaining outcomes.[66] Presumably, the latter were relevant inasmuch as SPI's costs and capacity in the field conditioned SPI's ability to compete for customers. In short, it cannot be reasonably concluded that the intensity of competition for propane customers was unaffected by the presence or absence of either SPI or ICG. On balance, the presence of one apparently implied more competitive pressure on the other. Thus, merger-to-monopoly is likely to reduce competition in the markets identified in Table 4.

2. Competition From Independents

In geographical markets in which SPI will not account for all (or virtually all) propane sales in the post-merger period, the competitive effects of the merger could be conditioned by the behaviour of other sellers. In particular, the substantial presence of other suppliers that are willing and able to compete aggressively with SPI might constrain the merged entity from increasing prices, even though market share concentration will increase as a result of the merger. On the other hand, as stated above, the remaining competitors might decide to match any price increases introduced by SPI in order to maintain the same price relationship to SPI as existed in the pre-merger period.

Two possibilities discussed earlier are relevant in this regard. One is that each remaining competitor might see it in its unilateral self-interest to increase its price given a price increase by SPI. Fear of competitive retaliation by SPI in the absence of a "coordinated" price increase need not be a dominant consideration in this context. Indeed, it might be profitable for fringe competitors to match SPI's price increases even if the former had no concerns about competitive retaliation. A second possibility is that individual competitors might find it profitable to increase the differential between its price and the price charged by SPI were SPI to maintain its new higher price; however, a belief that SPI would lower its price to re-establish the pre-merger differential, or,

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65 See, for example, the ICG memorandum from G. Shoemaker to D. Tatarniuk, dated September 10, 1996 which states that SPI is targeting ICG's base load market, telling ICG's customers that the Transformation Strategy has ICG "leaving town."

66 See, for example, Memo From Ken Weir to Cheryl Kristiansen, Subject: Superior Capital, Date: November 14, 1996 and memo from John Sereda to Blaine McGowan, December 4, 1997.

perhaps, lower its price below that benchmark, might make the expected profitability of a price increase greater than that of a strategy to widen the price differential with SPI.

It is therefore relevant to focus on two issues. First, would a price increase be a more profitable strategy for fringe competitors than allowing their price differential with SPI to widen in the absence of potential retaliation? Second, if the price differential temporarily widened, would retaliation by SPI be a significant risk facing fringe competitors? Considering the first issue, the profitability of matching SPI's price increase would be enhanced by the following factors:

- Existing customers of SPI are relatively loyal to SPI or (equivalently) are relatively price insensitive. In this case, expanding the price differential with SPI might bring little new business to other competitors. At the same time, it would imply foregoing additional net revenue associated with the higher price the competitor could charge its own customers.[67]

- It is costly or otherwise difficult for independents to compete for new customers, including SPI's customers.

a. Price Matching Independent of the Risk of Competitive Retaliation

SPI and ICG documents discussing competition for propane customers provide some insight into the first point.[68] In particular, both ICG and SPI identify the differentiation that exists between themselves and smaller competitors. Namely, SPI and ICG see themselves providing certain unique and/or superior services such as more sophisticated billing systems, 24 hour service and expanded credit facilities.[69] Customers who especially value those services may be reluctant to switch to cheaper suppliers even if the relevant price differential widens in the post-merger period.[70]

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67 An equivalent way of viewing this situation is that the merged party would probably find it unilaterally profitable to raise price; i.e., they would be unconcerned about how the competitive fringe responded.

68 We consider the second point in Section V.

69 See : memorandum from Rob Todd to Don Everett, Subject: Paramount Bid, December 9, 1997; "Superior Propane Competitor Analysis - Propane, Slave Lake -443;" and a memorandum from John Cooper to all SPI employees, October 2, 1997, Subject: Pricing.

70 In this regard, SPI documents indicate that the differential customers are willing to pay varies considerably across customers. See SPI documents: "Focusing on Value Growth - Building on Customer Needs," presentation by Regional Team, January 28, 1998; memorandum from John Cooper to all SPI employees, October 2, 1997, Subject: Pricing; and a marketing report prepared for SPI by Canada Market Research Ltd. titled "Defining Pricing Strategy in the Context of Customer Value Analysis (Commercial and Residential Markets)," October, 1997.

Some portion of SPI's sales in the post-merger period will be made to relatively price-insensitive customers. It might be argued that national customers are included in the group of accounts that is relatively price insensitive to prevailing price differentials between SPI and its competitors. Since SPI has a national network it is better suited to handle large volume, multi-location commercial and industrial accounts. To be sure, certain large industrial and commercial customers can (and do) source their own propane supplies; however, those who don't may find it uneconomical to internalize related services such as equipment maintenance and supply storage given relatively modest increases in the prevailing price differentials between SPI and independent suppliers in the relevant markets.

We are unable to identify evidence that precisely quantifies the extent to which SPI and ICG compete with other suppliers for the business of national accounts. Hence, we cannot conclude unequivocally that no such competition takes place. SPI's reply to an undertaking reports estimated "major" account customers (these are not necessarily national accounts) lost to propane competitors (and alternate fuel providers).[71] For the period 1995-1999, SPI identifies only eight instances in which sales of a major account were lost to another propane supplier. In four instances, the alternative supplier was ICG. The reply suggests that ICG has been the primary competitor for major accounts.

Some evidence on competition created by the presence of independents might be inferred from the previously cited ICG document "Qualitative Assessment of Opportunities." As noted earlier, in duopoly markets, respondents generally indicated that the competitive nature of local markets is low. Responses were available for some markets in which there were several competitors to SPI and ICG. The responses systematically suggest that competition is greater in these latter markets than in the previously discussed duopoly markets. We interpret this as indicating that the presence of other competitors (besides ICG or SPI) enhances competition in the relevant market.

There is other documentation of competition more generally between SPI and ICG and independent propane suppliers. In particular, at least some independents apparently do not always find it profitable to maintain a constant price differential with SPI and/or ICG such that customers do not switch suppliers. SPI and ICG documents identifying independent propane suppliers as competitors in the relevant market, as well as documents describing price discounting by specific independents are relevant evidence.[72]

The available evidence suggests that in some situations independents will find it profitable to independently increase their prices in the event of a price increase by SPI in

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71 SPI answer to Undertaking 85.

72 See SPI documents titled: "Southern B.C. Market - November 1997 Operating Report-Campbell River CSC;" and memorandum from D. Balicki to multiple recipients, dated February 29, 1996.

the post-merger period.[73] Equivalently, in some situations, SPI will find it unilaterally profitable to raise price in the post-merger period.

We will argue below that there are other disincentives to independent suppliers attempting to expand their sales substantially, including contractual commitments of customers to SPI or ICG and the need to incur additional sunk costs. It therefore seems safe to conclude that independent price increases pursuant to price increases by SPI will characterize the behaviour of some independents under a range of market circumstances. Others, especially those who have competed aggressively in the past, may behave differently.

b. Interdependent Price Matching

Existing documentation identifies instances of interdependence in which competitive retaliation by a major supplier resulted in alterations in behaviour by other competitors. For example, selective price cutting played a major role in Imperial Oil's decision to withdraw from propane distribution.[74] Other SPI documents include the following comments:

> Had a problem in Yorkton with Supersave not wanting to move on street price, and ICG retaliated by moving the street to 25.5 and Supersave followed.[75]
>
> Quintex - Look after all cylinder deliveries. At times will canvas our accounts but quick retaliation usually jogs their memory and they back-off.[76]
>
> When raiding occurs we can respond in kind to an equal number of same volume customers to send a message. With new competitors we would have to respond in their heartland as they have nothing to raid, as they are building.[77]

The documents include numerous other examples of contemplated or implemented retaliation by the majors against each other and against fringe distributors.[78]

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73 That is, independent of the risk of competitive retaliation by SPI.

74 Imperial Oil's entry and then exit from propane distribution is discussed later in this paper.

75 Memorandum from Rieder to Schmidt, February 26, 1996.

76 Document titled "Propane Competitors," dated 3/8/95.

77 Document titled "Superior Propane Competitor Analysis - Propane, Campbell River."

78 See: ICG memo from Paradis to Estey, November 8, 1996; ICG memo from Murray to Estey, November 12, 1996; ICG memo from Tomashewski to Sutherland, January 2, 1998.

On the other hand, as noted above, there are also instances where independents were apparently successful in bringing down propane prices. This suggests that the threat of competitive retaliation by a major supplier has not been a ubiquitous deterrent in the past to competitive price initiatives by independents. However, the proposed merger is likely to make the threat of competitive retaliation a more robust deterrent to price competition in the future. There are several reasons for this. One is that a smaller number of competitors should make it easier for SPI to identify specific sellers who compete by establishing a wider than "traditional" price differential. A second reason is that the removal of ICG from the market increases the "payoff" to SPI from disciplining an active price competitor. With ICG in the same relevant market as SPI, any actions taken exclusively by the latter to "discipline" an aggressive independent seller would also presumably benefit ICG.[79] That is, the benefits of re-establishing the traditional price differential with independents would contribute to ICG's profitability as well as to SPI's profitability.[80] In effect, SPI would be absorbing all of the costs of disciplining the independent competitor while sharing the benefits with ICG. It is to be expected that SPI would be less willing to meet or exceed an independent's price reductions under this circumstance than it would be if it were the only major seller in the relevant market. A third reason is that the removal of ICG from the market eliminates the possibility that SPI would trigger more widespread price competition between itself and ICG by retaliating against independents who are competing aggressively for new customers through price discounting, particularly when ICG is also soliciting the business of those customers. Fringe competitors would presumably anticipate more aggressive competitive behaviour by SPI and alter their behaviour accordingly.

A credible risk of competitive retaliation by SPI is more likely under the following market circumstances:

1. ICG has a relatively large pre-merger share of the relevant market.
2. Independent sellers in the market are relatively small and also few in number.
3. All or most of the independent's profits are sourced in the relevant market so that heavy price discounting in that market has a disproportionate relative financial impact on the independent.
4. Barriers to exit (and new entry) are relatively high so that the independent would find it unprofitable to exit the market and then return once prices were restored to a higher level.

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79 Disciplining might take the form of SPI offering to meet the lower price charged by the independent seller for any of its customers who receive a lower bid price from the independent. The presumption is that SPI can offer lower prices to selective customers. In this regard, there is ample evidence that SPI customers pay different prices for propane, even for the same application.

80 A symmetrical set of considerations would face ICG as well.

Professor West's evidence provides market share estimates for ICG and SPI in markets other than those identified in Table 4. It also provides some information on independent competitors in those markets. We can therefore consider whether the risk of competitive retaliation by SPI is likely to be significantly enhanced by the proposed merger in those other markets.[81]

In attempting to apply the criteria outlined above, it should be again noted that economic theory offers no definitive conclusions regarding what the actual competitive process will be in "real world" oligopolistic markets. Hence, in assessing the extent to which the proposed merger will contribute to reduced competition in a set of relevant markets, we can offer only qualitative judgements of the "more or less" variety.

There are an additional 57 markets for which data are available and in which the combined post-merger market share of the merged entity will be less than 95 percent. These markets can be broadly classified into three categories:

Category 1 - Markets in which SPI's or ICG's pre-merger market share is relatively small (or comparable) to the shares of several other small competitors. In these markets, it is relatively unlikely that the merger, *per se*, will substantially strengthen SPI's incentives to retaliate against price competitors, since ICG would not have been a substantial "free-rider" on SPI's disciplinary efforts. Moreover, if there are a number of substantial competitors in the market, SPI's ability to detect and punish (at "low cost") individual price competitors may not be much enhanced by ICG's leaving the market. Hence, the merger, *per se*, may have minimal impacts on competition between SPI and fringe competitors comparing the pre- and post-merger periods. This assessment does not necessarily imply that the merger is irrelevant to the competitive process in these markets. For example, the merger eradicates the potential for future competition between ICG and SPI. More directly, it eliminates competition for buyers with strong preferences to deal with one of the majors.

Category 2 - Markets in which SPI's and ICG's pre-merger share are large relative to the shares of other competitors, and the remaining competitors are fairly small. In these markets, the free-rider issue will have greater *a priori* relevance. Moreover, SPI (after the merger) will be in a position to retaliate against individual competitors that may have limited resources to withstand targeted price reductions. The merger is more likely to enhance interdependence between SPI and the competitive fringe in these latter markets.

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[81] The issue of entry and exit is considered in a later section.

Category 3 - Markets in which ICG has a substantial pre-merger market share, but in which there are one or two other competitors who also have substantial market shares.[82] The influence of the merger on competitive behaviour in this set of markets is less clear than for the preceding sets. The removal of a substantial competitor increases the likelihood of interdependent behaviour presuming that firms were acting relatively independently prior to the merger; however, with relatively high pre-existing levels of concentration prior to the merger, the possibility cannot be excluded for any particular market that firms were behaving in a highly interdependent fashion prior to the merger. That is, they may have been largely refraining from competing prior to the merger.

Once again, data from ICG's "Qualitative Assessment of Opportunities" are indicative. Specific responses to the "level of competition" question are available for a number of markets that can be categorized as triopolies or near-triopolies. The responses are distributed across all three possibilities: low, medium and high, with no clear patterns that we can detect. However, compared to the responses for duopoly markets, there are relatively more responses indicating medium or high competition. Hence, the potential relevance of the merger to competitive conditions in Category 3 markets cannot be dismissed since a substantial share of these markets are characterized by ICG as supporting medium or high levels of competition prior to the merger. That is, in many Category 3 markets the potential for increased interdependence associated with the merger is significant.

Table 5 summarizes our classification of various markets into one of the categories cited above. In individual cases, the classifications may "straddle" two categories. In these cases, we chose to classify the market to either Category 1 or Category 3 when Category 2 was the alternative option. In this way, our assessment of which markets might raise concerns about interdependent behaviour is more likely to err on the side of underestimation. The distribution of markets was as follows: eight markets were classified as Category 1, thirty-three were classified as Category 2 and sixteen were classified as Category 3. The majority of the markets classified as Category 3 were either in Manitoba or Saskatchewan.

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[82] In some cases, the market shares of other individual competitors may be substantially larger than SPI's pre-merger market share.

Table 5
Classification of Markets by Category[83]

Category 1	#6-Joliette	#23-Guelph	#50-Manning
	#7-Malbaie	#27-Owen Sound	#53-Oyen
	#8-Les Cedars	#40-Yorkton	
Category 2	#4-Drummondville	#28-Porcupine	#54-Red Deer
	#5-Gatineau	#34-Macklin	#55-Red Earth Creek
	#9-St. Constant	#35-Prince Albert	#56-Rocky Mountain House
	#10-St. Romuald	#41-Calgary	#58-Ashcroft
	#12-Thetford Mines	#42-Camrose	#60-Campbell River
	#14-Bala	#43-Edmonton	#63-Coquitlam
	#16-Belleville	#44-Edson	#64-Cranbrook
	#17-Carleton Place	#45-Elk Point	#66-Kelowna
	#18-Chatham	#47-Grande Prairie	#67-Nanaimo
	#19-Concord	#49-Lethbridge	#68-Prince George
	#22-Fenelon Falls	#52-Medicine Hat	#69-Radium
Category 3	#1-Moncton	#33-La Ronge	#51-Slave Lake
	#2-Matane	#36-Regina	#61-Castlegar
	#3-Cap-de-la-Madelaine	#37-Saskatoon	#62-Chetwynd
	#30-Virden	#38-Swift Current	#70-Squamish
	#31-Winnipeg	#39-Weyburn	
	#32-Buffalo Narrows	#48-High Level	

3. Summary of Market Types and Likely Merger Consequences

In summary, we have characterized four basic sets of market structures using Professor West's findings. One set includes geographical markets in which the merger would bring about a monopoly or near-monopoly. To the extent that SPI and ICG were competing in an active fashion before the merger, it can be inferred that the merger will contribute to a lessening of competition in that set of markets, absent a sufficient threat of *de novo* entry. Our analysis of available documents identifies the existence of some pre-merger competition between ICG and SPI, although it also indicates that the parties recognized their interdependence. It is likely that the degree to which ICG and SPI

[83] The numbers preceding geographic markets correspond to Professor West's listing.

competed in the pre-merger period varied across markets, even where the two firms were the only two sellers in the market. Available information does not present reliable quantification of any such differences. We are therefore led to conclude that the merger is likely to have anti-competitive consequences in all markets that will be monopolized or virtually monopolized after the merger, although we cannot make precise inter-market comparisons in this regard.

A second set includes markets in which the merger, *per se*, adds relatively little to the combined market share of the merged entity. These are what we called Category 1 markets. For these markets there seems relatively little scope for the merger to contribute to a significant increase in interdependence between SPI and the remaining competitors. Nevertheless, there will be a relevant lessening of competition for customers with strong preferences for major suppliers as well as a potential lessening of future competition with the removal of ICG.

A third set includes markets (Category 3) in which there was substantial market concentration prior to the merger but where there were at least three substantial competitors (including the merging parties). In such markets, the elimination of ICG is likely to enhance interdependence and reduce competition. The scope for reduced competition is a function in part of pre-merger competition. Available evidence suggests that healthy levels of competition characterize the pre-merger state in a substantial number of Category 3 markets.

Finally, a fourth set includes local markets in which a relatively fragmented fringe of firms compete against SPI and ICG in the pre-merger period, and where SPI and ICG are the two largest sellers. This comprises markets that we identified as Category 2. We argue that, in these markets, there is a substantial likelihood that the merger will significantly reduce competition, all other things constant. The scope for a reduction in competition should be higher in those markets where the post-merger share of the dominant firm is higher since interdependence between SPI and the remaining competitive fringe should be substantially enhanced by the merger.

Given the increased concentration that will result in the relevant geographical markets, we must conclude that the merger raises competition policy concerns. At the same time the merger involves a large number of markets (more than 70) that are characterized by different structural and behavioural characteristics. This makes it difficult to make precise inter-market comparisons of the competitive effects of the merger.

Our preceding analysis suggests that markets can be categorized into those where the scope for reduced competition is larger or smaller, and where the likelihood of reduced competition is higher or lower. For example, the probability of reduced competition is high in markets where a duopoly is converted to a monopoly. At the same

time, the degree to which competition is reducible may be modest given attenuated competition to start with. Notwithstanding the heterogeneity of market structures, the elimination of existing competition between ICG and SPI will be relevant to at least a subset of customers in each of the markets we consider. Moreover, in most markets the merger will lead to a significant increase in market concentration. This is likely to enhance interdependence among competitors and attenuate competition between SPI and remaining competitors, where such competition has existed in the past.

V. BARRIERS TO EXPANSION OF INCUMBENTS AND TO *DE NOVO* ENTRY

The likely impacts of the merger on competition are further conditioned by the potential for propane supply to expand given a price increase. Two sources of additional supply are possible: entry of new competitors and expansion of existing competitors.

A. Sources of Barriers

Both *de novo* entrants and incumbent suppliers seeking to make additional sales must accomplish several tasks including:

- obtaining requisite propane supply, and equipment,
- arranging for transportation of the supply to a primary and/or secondary distribution facility for storage or onward delivery,
- delivering the product to the customer.

Obviously, a fourth task (whose achievement motivates the first three tasks) is winning additional (or new) sales. The importance, as an entry barrier, of the need to build a customer base is reflected in an ICG document.

> The primary barrier is the large capital requirement to build a secondary storage/delivery network, and the time required to build a customer base to achieve profitability. The secondary barrier is the industry's practice of owning customer storage vessels and signing multi-year supply agreements with customers.[84]

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[84] ICG, "Due Diligence Questions," p.4. These statements were prepared by ICG to assist Dominion Securities Inc. in its preparation of a preliminary prospectus for the ICG Propane Income Fund.

1. Product Supply

There is potential concern about the continued availability of propane supply in a post-merger environment. The specific concerns are that SPI will try to "tie-up" supply through a greater number of "keep dry" contracts with refiners and/or that SPI will exert pressure on independent wholesalers to keep supply away from independent retailers. Indeed, a Superior document indicates recognition of this potential entry barrier.

> Ability to control ease of entry by competitors. One of the competitive threats we need to address is the ease of entry for Competition in a market area. Control can be exercised for example by locking up supply sources and transportation, or by owning the grid distribution to residential customers etc.[85]

SPI acknowledges that access to supply can constitute an entry barrier. The height of this barrier undoubtedly varies by geographical market. For example, in Alberta the widespread availability of independently owned natural gas processing plants makes supply relatively freely available.[86] However, even in this situation it should be noted that natural gas processing plants without access to substantial storage facilities (e.g., without pipeline access to underground storage) require regular, secure pickups. While such gas plants might be willing to accommodate a number of small scale propane distributors, reliance upon a large number of small independents for the bulk of the propane removal would complicate their plant operations.[87] A similar situation holds with respect to refineries. There too, propane is a by-product that must be moved lest it obstruct the production flow. Refineries in some instances seek to ensure the timely removal of propane by signing "keep-dry" contracts with propane distributors. These supplies are therefore not available to distributors other than the contracting party.

2. Transportation, Storage and Distribution

The availability of primary transportation, i.e., railroads and trucks to move the propane from refineries to primary or secondary distribution facilities can also be

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85 SPI document titled "Acquisition Strategy," April 21, 1998.

86 It should be noted that not all gas plants have loading racks for truck pick-up of propane. In such cases, these plants are not viable sources of supply for entrants.

87 Propane is a by-product of natural gas processing. Gas plants cannot allow propane supplies to "back-up" in the system. As a result, they prefer to deal with propane distributors that can guarantee large, continuous liftings.

problematic.[88] There is a minimum volume that must be transported to take advantage of economical modes of transport such as rail. Hence, small retailers would not usually be in a position to take delivery from refineries, but would either need to "batch" orders with other small retailers or rely upon intermediaries (who could be other large retailers like Superior) to arrange for propane delivery at their own branches or satellite facilities. The emergence of such buying groups or such intermediaries would likely take time.

The relevant issue for small wholesale purchasers of propane (i.e., resellers) would appear to be the following one: if SPI (after the merger) refused to deliver propane to the small independent propane retailers that they or ICG currently serve (as well as to *de novo* entrants), or otherwise discriminated against independents who were aggressive competitors to SPI in terms of price or other conditions of sale, or took other actions to deny them supply, would those independents have economical options to other sources of supply?

The presumptive general answer is "yes" on the condition that those independents were able to make large scale purchases of propane and the primary transportation services required to move it from origin to secondary distribution points. Propane is available on economical terms to those who purchase in quantity. Railcars and tanker trucks are owned or leased in substantial quantities by companies other than SPI. However, employment of these transportation services necessitates dealing in large volumes.

De novo entrants located at a distance from supply points would need to invest in their own storage facilities in order to take delivery of propane from the primary distributor, as well as trucks to move product to the customers' premises. Investments are also required in customer premises equipment (e.g., tanks). Incumbent competitors seeking to expand would also be obliged to make substantial incremental investments in such capacity.

We have not found consistent evidence that trucks and large volume tanks, cylinders or other equipment suffer from persistent, limited availability. There are many producers of such equipment, and for most purposes the market for the equipment is North American-wide. Hence, the primary issue related to expanding transportation,

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[88] A 1993 review of propane transportation in Ontario, Imperial Oil noted that "the marketplace today is dominated by carriers aligned with Imperial's competition [i.e., ICG and SPI] in the retail propane market place." The document goes on to note that ETI (SPI's affiliated carrier) accounted for 60% of the Ontario market. Imperial Oil memorandum from M. C. Milne to W. J. McAdam et al., titled "Ontario Truck Delivered Market Development," September 3, 1993.

storage and distribution capacity is whether the sunk costs of entry are large relative to the prospective rewards.[89]

Obviously, the sunk costs of entry or expansion will be a function of the scale and scope of entry or expansion.[90] Setting up a small branch would require a 30,000 USWG storage tank that would cost (with site preparation) in the range of $150,000. Two delivery units would cost approximately $150,000 per unit. Tanks to install on the (residential) customers' premises would cost about $500,000 (for a minimally efficient number of customers). This estimate of approximately $1 million does not include the cost of land itself or buildings on the site.[91]

The costs of entry or expansion will also be a function of the geographic market in which entry occurs, as well as the customer segments served. With respect to the geographic market, entry and expansion costs are lower in Alberta than elsewhere. Specifically, given the large number of natural gas processing plants dispersed throughout the province, entrants and incumbents can economize on storage capacity (i.e., they can pick up from the gas plant and deliver directly to the customer without secondary storage facilities).[92]

Entry to serve non-residential customers is generally more costly than entry to serve residential customers. For example, tanks installed on the premises of industrial customers are substantially larger and more expensive than those installed on the premises of residential customers. Expensive equipment is required to service the bottle-fill segment (e.g., belt or carousel equipment). Entry into the construction heat and roofing segments requires investments in heaters and vaporizers. Supplying the forklift truck segment requires implementation of cylinder exchange services, investment in a cylinder inventory and in specialized cylinder cages.[93] Besides more costly capital equipment, there are other requirements to compete effectively in some non-residential

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89 Regulatory difficulties in obtaining permits for storage tanks can be a substantial barrier to the industry's expansion of storage capacity in some locations. The Lower Mainland of British Columbia is an example.

90 Sunk costs are those that cannot be recovered in the event of exit from the business.

91 Obviously, the degree to which this investment is sunk will depend upon a number of factors including the site-specificity of the capital investments.

92 Operating without secondary storage facilities can, however, be difficult. SPI's experience in Clarenville, Newfoundland is illustrative. Apparently Superior attempted to serve the Clarenville area, where it had no storage facilities, from the Come-by-Chance refinery. In arguing for local storage, J. Dooley stated, "[i]n addition we are at the mercy of the line-ups for loading at the refinery and often have run out of gas and can't complete our runs as scheduled" (memorandum from J. Dooley to A. Carroll, Subject: Clarenville Justification, November 6, 1997).

93 SPI views these investments as capital barriers to entry to these segments. See SPI's "Alberta Central Market Segmentation Study - December 1995."

end-use segments. For example, skill requirements for employees are higher in the automotive and bottle-fill segment related to operating under the Dangerous Goods Act. The latter imposes controls related to worker training and certification. As another example, ICG uses in-person sales representatives in industrial/commercial and agricultural end-use segments, whereas the telephone tends to be used for marketing to residential customers.[94]

Serving individual (usually large) customers can also impose above average cost requirements on sellers. For example, ICG notes that when it is selling to a complex installation, they require a technical service adviser as well as a sales representative who tends to have a predominant focus on the relevant activity.[95] Clearly it would be difficult for a company to simply rent such specialized expertise on an "as-needed" basis, and hiring such expertise on a full-time basis is more costly than hiring less technically qualified personnel.

Perhaps a more illustrative example of the additional technical and related complexities associated with supplying specific customers is provided by a 1994 contract between SPI and CN. A description of the contract discusses the extensive cooperation required among the various SPI branches in order to generate information necessary to provide CN with a centralized billing facility and internal cost control centre.[96] This centralized billing and related information system was clearly an important selling point for CN, and it is not conceivable that independent sellers operating in different geographical regions could have "cooperated" to create a similar information system to bid against SPI for CN's business. The creation of a network by a new entrant similar to SPI's would certainly involve a massive outlay of capital over a relatively extended period of time.

In short, since costs of entry or expansion will vary with the nature of the end-use and end-customer activity, it is impossible to generalize about either the magnitude or the recoverability of the associated costs if entry or expansion proves unprofitable. Presumably competing as a small supplier to residential consumers (especially in Alberta) involves relatively low sunk costs, especially if tanks and trucks can be sold in secondary markets in the event of unsuccessful entry. On the other hand, competing for large national accounts such as CN arguably involves relatively large sunk costs and specialized expertise.

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94 Examination For Discovery of Mr. Mackey and Ms. Cherkas, Calgary, May 11, 1999.

95 Examination For Discovery of Mr. Mackey and Ms. Cherkas, Calgary, May 11, 1999.

96 Interoffice Correspondence To Ontario Branch Managers From G. C. McCauley, Subject: New CN Contract, Pricing P.O. Information Effective, May 1, 1994.

3. Reputation

Lack of reputation among customers could delay the acquisition of new customers and, therefore, the time until a new supplier reaches an efficient scale. It is difficult to assess the importance of the reputation factor, but it is worth noting that when listing the determinants of a customer's buying decision, SPI includes "reliability of supply and long term availability," and "the supplier's local presence and reputation in the community."[97] A 1992 Imperial Oil document indicates that notwithstanding that firm's reputation in the marketplace, a perceived lack of storage capacity in Yellowknife would impede its ability to attract customers.

> Our one tank's capacity of 100kL would severely limit our ability to supply our customers, and in fact customers will be hesitant to switch suppliers in view of our supply limitation.[98]

Presumably, expenditures on marketing and capacity could assist in the establishment of a reputation, but they would also add to the costs of entry. Increased marketing expenditures also might not compensate for a perceived lack of adequate supply capacity.

4. Contractual Commitments

The expansion of existing sellers, and *per force*, the entry of new sellers will be constrained by contractual commitments that bind customers to SPI or ICG for any length of time. Specifically, customers who feel bound contractually to either of the merging parties will be unavailable to other sellers until their contracts mature. The *de facto* smaller number of potential customers available to would-be rivals reduces the anticipated profitability of pricing below the merged party's price, and therefore reduces the likelihood that inter-firm rivalry will render a price increase by the merged party unprofitable in the short-run. Put alternatively, the anticipated increase in sales revenue from under-pricing the merged party is reduced by contractual commitments that deter customers from switching away from the merged party to other propane sellers. Unless the sunk costs associated with expansion (or entry) decrease proportionately with a smaller number of potential customers, the anticipated risk relative to reward associated

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97 Superior Propane Income Fund, *1997 Annual Report*, p. 9 (included as Tab 1, Davies, Ward and Beck, *Appendices to the Submission to the DIR Regarding the Proposed Acquisition of ICG Propane Inc. by Superior Propane Inc.*, August 4, 1998.

98 Imperial Oil document titled "Application for Authority" regarding installation of a 30,000 gallon propane tank in Yellowknife, June 9, 1992.

with competition will rise for incumbent producers and new entrants given a smaller potential market.[99]

Unfortunately, the available documentation does not provide a clear and comprehensive picture of the average contractual commitment that specific customers currently have to either SPI or ICG. Hence, we cannot say whether the bulk of SPI and ICG customers will be free of their contractual commitments within any particular period of time. The extent to which contractual commitments limit the willingness of customers to change propane suppliers is also somewhat ambiguous. The documents provide evidence that Superior and ICG have threatened customers with litigation over breaking their contracts. However the documents do not clearly indicate whether these types of threats are, on balance, effective.

ICG states that their policy is generally not to engage in conduct that would expose it to liability for inducing breach of contract when a potential customer has or may have a pre-existing contract with another supplier.[100] This implies that the threat of litigation is real and consequential in terms of discouraging competition for customers currently under contract. Additional evidence of the relevance of contractual commitments as a barrier to competition is a strategy document indicating that an initiative to "sell tankage to customers" would result in a "loss of a barrier to entry and customer switching."[101] Imperial Oil documents indicate that SPI reacted to its entry into the Grande Prairie market by threatening litigation (i.e., it was alleged that Imperial Oil had induced SPI's customers to breach their contracts with SPI).[102] Another Imperial Oil document suggests that ICG and Superior were using both price and "contract levers" to protect their market shares in the face of Imperial Oil's attempted market entry in the early 1990s.[103]

Another potentially relevant feature of the contracts that the parties to the proposed merger have with at least some customers is a right to match the terms of any *bona fide* third party offer to lease equipment. An example is the lease agreement

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99 The efficiency gains associated with the proposed merger identified by SPI suggest that some economies of scale exist at the branch level.

100 Response By ICG Propane Inc. To Order Dated September 14, 1998 Pursuant to Section 11 of the Competition Act. SPI states that it advises potential customers to provide confirmation of termination of contracts, or to deal directly with their current suppliers to resolve or terminate existing agreements before pursuing further discussions with those customers. See Superior Response to the Information Request of the Director of Investigation and Research Regarding the Proposed Acquisition of ICG Propane Inc. by Superior Propane Inc.

101 ICG document titled "Confidential, NGL/ICG Strategic Plan, May 1996."

102 Imperial Oil document titled "Propane Agency Status Report Grande Prairie", RBP Presentation/Nov/92/clr, p.22.

103 Imperial Oil document titled "Retail Propane Review," November 3, 1993, Toronto, Ontario, p.26.

between Superior Propane Inc. and Payless Turbo.[104] The agreement calls for Superior to have a right to match the terms of any third party offer for up to six months after Payless provides notice to Superior that it is entering into an agreement for lease of equipment from a new lessor. This feature effectively alerts SPI to attempted competitive incursions with respect to leased equipment (and ultimately new propane sales), thereby facilitating competitive retaliation by SPI.[105] To the extent that the identity of the third party is revealed to SPI, it facilitates a targeted competitive response against the third party. A result is that third parties are less likely to initiate competitive attacks against SPI.

Finally, since the storage equipment on a customer's premises is generally owned by the propane supplier, switching costs might be introduced by the need for the customer to install new and/or remove existing storage facilities when switching suppliers. In this regard, an ICG document notes the following.

> What are the costs related to switching propane suppliers?
> .....
> We own the customer tank - normally the customer would pay deinstall and installation charges to switch suppliers.[106]

5. Overall Assessment of Barriers to Entry and Expansion

The sum of these various factors, in our opinion, create disincentives to large-scale *de novo* entry, as well as to the substantial expansion of numerous small-scale *de novo* competitors, in the event that the latter were otherwise inclined to compete against SPI. In addition, the industry is mature and has experienced slowly declining demand in recent years.[107] As noted in the *Merger Enforcement Guidelines*, "entry into start-up and growth markets is less difficult and time consuming than it is in relation to mature markets."[108]

Whatever entry or expansion does occur might also take place relatively slowly. Besides the time required for developing a reliable reputation as a new entrant, time would be required to obtain the necessary permits to install storage capacity. As noted in an earlier discussion, in some localities, environmental concerns may make it difficult to

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104 Lease Agreement Between Superior Propane and Payless Turbo. We are unaware of the extent to which similar clauses are included in other contractual agreements.

105 As common practice, propane suppliers do not fill storage tanks owned by other suppliers.

106 ICG, "Due Diligence Questions."

107 This claim does not apply to Quebec. As a result of the 1998 ice storm and the resulting, prolonged power outages, there has been an increased demand for backup energy sources, including propane.

108 DIR, *Merger Enforcement Guidelines*, Ottawa: Supply and Services Canada, 1991, p. 40.

obtain such permits. As also discussed above, to the extent that contractual restrictions related to equipment rental limit the ability of many customers to switch suppliers in the short run, additional delays in substantial entry would be introduced. The applicable lengths of customer contracts vary across customer categories, e.g., residential customers typically have one year contracts; however, even short-term contracts could indirectly discourage entry, since they imply that new entrants may have to operate for a period of time at well below minimum efficient scale while they wait for additional potential customers to come "on line." This concern is obviously magnified as the length of the relevant contractual time period expands. Finally, there is some evidence that while propane is available from producers, there can be delays in obtaining contracts for smaller volumes. Such delays might be exacerbated by the need to find alternative suppliers to ICG or SPI in the event that the merged party discontinues supplying propane to specific resellers as a competitive tactic.

In sum, conditions surrounding entry do not correspond to the conditions describing a "contestable" market. A contestable market is one in which sunk costs associated with entry at an efficient scale are relatively low and entry at an efficient scale can take place very quickly. Therefore, it is unrealistic in our opinion to assume that new competition will (across all or most relevant geographical markets) "discipline" a significant price increase by the merged party within a relatively short (e.g., two year) period. Moreover, there are inhibitors to the substantial and rapid expansion of fringe competitors that augment anti-competitive consequences associated with increased interdependence (as discussed earlier).

B. Observed Entry and Exit

Presumably, potential entrants will compare expected revenues to expected costs in order to estimate possible rates-of-return to the required investments. In this context, sufficiently high price-cost margins in the relevant markets might encourage entry despite the disincentives discussed above. Obviously, the more uncertain the estimated positive net cash flows following entry, the less likely a risk averse investor will be to actually enter, all other things constant. Without reliable forecasts of future profit margins in the industry, along with estimates of costs of capital and risk preferences of potential entrants, it is impossible to be definitive about the extent, nature and speed of *de novo* entry or expansion of incumbents that might follow a significant price increase for propane in the post-merger period.

Historical patterns of *de novo* entry are instructive about the nature of the entry process. For example, a reasonable number of successful entries of relatively large competitors would be inconsistent with a view that the sunk costs and other disincentives to such entry limit long-run *de novo* entry to small-scale competitors. Likewise, observations of small-scale entrants rapidly growing and increasing their market shares

shortly after entry would belie the notion that it will ordinarily take a relatively long-time before actual entrants become a substantial competitive force in the marketplace.

1. Small Scale Entry

Some limited information is available on new firm entry in recent years. One source of information is the membership list of the Propane Gas Association of Canada (PGAC). Specifically, the PGAC has provided estimates of new members over the period 1994 through May 1999. New PGAC members might be assumed to be new entrants to the industry, although it is possible that some incumbent non-members may have finally decided to join the PGAC. It must also be noted that new firms might enter the industry without joining the PGAC. Hence, changes in PGAC membership are an imperfect indicator of *de novo* entry.[109]

Over the period 1994 through May 1999, there were 41 new memberships in the PGAC. This number likely understates the true number of new entrants, primarily by ignoring entrants who did not join the PGAC. In this regard, SPI provides a list of 45 new propane entrants over the past three years.[110] Over the past three years, i.e., from 1996 through May 1999, there were only 20 new members of the PGAC.[111] Notwithstanding potential biases in either estimate, it is clear that new entry has taken place in the sector.

The PGAC also reports membership exits; however, it cannot be assumed that exit equates to financial failure. PGAC members are not required to explain why they gave up their memberships, nor is the PGAC prepared to speculate on their motives for doing so. Hence, some exiters may have simply decided that the benefits of membership did not justify the costs. Others may have been acquired by competitors without necessarily being in financial distress. Nevertheless, it is noteworthy that of the 41 new members of the PGAC from 1994 to the present, 22 exited the PGAC by mid-1999. This observation is not inconsistent with the hypothesis that many new entrants find it difficult to achieve efficient levels of scale and therefore leave the industry, directly or indirectly, soon after entering.

By contrast, SPI identifies all of its estimated new entrants over the past three years as still being in business. It does identify 15 firms as exiting from the propane

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109 The PGAC has no statistics on total retail propane marketers versus total PGAC retail marketer members. Correspondence between Rita Guest of the PGAC and the authors.

110 See SPI's answers to Undertaking 43.

111 It might be noted that only eight firms were included in both the PGAC and the SPI lists of entry over this period. We did not establish why there was such a limited concordance between the two lists.

industry over the three year period. Hence, these exiting firms presumably entered the industry prior to 1996. Moreover, virtually all were identified by SPI as having been acquired by another company, either in part or in whole.[112] Therefore, the SPI information is not directly suggestive of a high failure rate on the part of new entrants. Moreover, it suggests that it is often possible to sell assets to other participants in the industry, thereby possibly recovering a portion of the costs associated with entry. From the information provided by the parties and available from public sources it is not possible to assess what the "true" rate of *de novo* entry has been in the sector. Nor can we assess the typical pattern of financial performance of new entrants (i.e., are they profitable or unprofitable?).

SPI also provides estimates of each entrant's (presumably current) volume, as well as the entrant's share of the market in which it competes.[113] Specifically, estimates of volume sold are available for 38 of the entrants identified. Of these, almost half (17 firms) have estimated volumes of less than 1 million litres a year. Another 10 firms (approximately 26 percent of the sample) sell between 1 and 3 million litres a year. In short, most new competitors enter at a small scale and grow relatively slowly. The small scale of entry is mirrored in the relatively small shares of markets accounted for by recent entrants. For example, 13 of the 38 firms (slightly over one-third of the entrants identified) enjoy market shares of 1 percent or less. Over two-thirds of the entrants (68 percent) enjoy market shares of 3 percent or less. Only eight recent entrants enjoy market shares of 10 percent or more.[114]

The overwhelming majority of recent entrants identified by SPI serve more than one customer segment (e.g., residential, commercial and industrial) which further supports the appropriateness of evaluating market share changes on an "all propane" basis. SPI also identifies whether the entrant is affiliated with an alternative fuel company. This information is reported for 31 firms, of which 12 (approximately 39 percent) are so affiliated. Most of the latter sell gasoline and/or fuel or diesel oil. For 12 of the alternative fuel entrants, information is available on their propane sales volumes. We calculated the average reported volume and compared it to an average calculated for 18 firms that reported a specialization in propane. Specialized propane companies sell approximately 60 percent of the (propane) volume sold by alternative fuel companies. We interpret this as suggestive of the marginal competitive advantage enjoyed by firms that have some reputation for experience in the marketplace, as well as larger resources that may serve as a signal of reliability to some buyers.

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112 It is still possible that the acquisition was motivated by poor financial performance of the acquired firm.

113 Our presumption is that the reported share is calculated as the entrant's sales of propane divided by all propane sales in the entrant's geographic location.

114 These shares refer to local markets as defined by SPI.

In summary, small-scale entry is not an unusual event in propane retailing; however, entry occurs at a relatively small scale, and expansion of entrants appears to be both modest and relatively slow. Given the relatively large market shares that the merged entrants would enjoy in many geographical markets, it is doubtful that *de novo* entry on the scale described in this section would act as a meaningful deterrent to a significant price increase. Nor would a similarly modest pace of expansion by incumbents act as a significant deterrent to a price increase by the merged party.[115]

2. Large Scale Entry

There is one recent example of attempted large scale entry into propane distribution. In the early 1990s, Imperial Oil Limited (IOL) developed and executed a strategy to distribute propane to the agricultural, commercial, industrial and automotive market segments in Western Canada. In effect this was a product extension strategy as IOL intended to add propane to the product slate offered by its established branded agents in Western Canada. Arguably, IOL was the most, or one of the most advantaged, potential entrants to the market. This was so for a number of reasons.

First, because of its upstream activities in oil and gas production and refining it had access to propane and considerable experience in handling liquid petroleum products at the wholesale level.

Second, IOL had an established distribution system. In fact, many of its agents had under-employed assets that could be used to store and distribute propane. This is because agents in agricultural areas distributed ammonia fertilizer which has many of the handling properties of propane (i.e., it is stored and transported in pressurized vessels). This equipment was idle for 10 months out of the year and could be converted (i.e., the tanks could be purged and cleaned) to propane use at low cost. Furthermore, because of this business the agents had experience in handling pressurized product.

Third, IOL had an established customer base. Many of the agents' ammonia, fuel and lubricants customers also used propane. Moreover, IOL itself was a customer. At the time, IOL purchased propane from ICG for multiple applications (e.g., heating at remote water injection sites, fueling pump jacks, use as refrigeration and instrument gas and fueling transportation equipment).

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[115] Consider the following example. Imagine that the merged party has 80 percent of the sales in a market while the competitive fringe has 20 percent of sales. A 5 percent price increase by the merged party will be unprofitable if its quantity sold decreases by at least 5 percent holding average cost constant. This implies, in turn, that the competitive fringe must expand by 25 percent to win away 5 percent of the merged party's sales. A 10 percent price increase by the merged party would therefore imply a 50 percent increase in sales by the competitive fringe.

Fourth, IOL enjoyed an established reputation.

Notwithstanding these advantages, IOL's entry was unsuccessful. In large measure this failure was attributable to the competitive responses of SPI and ICG. These included selective price cuts, threats of litigation (for inducing customers to breach their contracts with the incumbents), and offers to customers of free tank rentals. IOL found that it was extremely difficult to persuade agricultural and commercial customers to switch tankage. This was particularly true when the incumbents enjoyed a "last look" on price offers (i.e., when they had the opportunity to meet or beat IOL's price offering).

IOL also had difficulty serving national accounts. Its 1993 experience in bidding on a Canadian Tire Corporation (CTC) contract is illustrative. CTC required propane for auto, cylinders and heating in multiple locations across the country. Because of its focus on Western Canada, IOL had substantial logistical problems in putting together a proposal that would satisfy CTC's requirements in every geographic market. IOL recognized that serving this account would involve significant investments on its part and therefore it solicited a multi-year commitment from CTC. Ultimately it failed to obtain the account.

The logistical difficulties confronted by IOL in attempting to serve national accounts are illustrative of the problems that would confront a group of independent distributors that tried to combine efforts to serve a customer in multiple geographic markets.

In summary, IOL's experience is indicative of significant barriers to substantial, multi-market entry into propane distribution.

3. Summary - Observed Entry

The picture that emerges with respect to entry is that there is considerable "churn" amongst small scale entrants. Entry at small scale is possible, expansion is difficult, and market share for small scale entrants comes at the expense of other small players. This is reflected in the following statement from an ICG document.

> The rest of the market is served by 10 regional and 60 small independent competitors. Within the smaller participants the industry is very dynamic, with buyouts, startups and exits occurring regularly - however ICG's and Superior's combined market share has not materially changed in the past 5 years.[116]

[116] ICG, "Due Diligence Questions," p.4.

C. Other Evidence on Entry

There is other evidence bearing upon the likelihood that the threat of *de novo* entry would constrain price increases in the post merger period. Specifically, ICG's "Qualitative Assessments of Opportunities" provide branch perceptions of the threat of the threat of new competitors. Specifically, they are asked where the threat is low (due to storage requirements and the loyalty of customers to extant suppliers), medium (where storage is limited but customers are willing to switch suppliers) or high (where there is room in the market for entrants, demand is high and facilities are available). Of the approximately 90 satellites for which responses apply, less than ten percent replied that the threat of entry was high. Conversely, about 41 percent responded that the threat was medium, and about 50 percent claimed the threat was low.

D. Conclusions: The Condition of Entry

Our investigation of entry conditions into propane retailing indicates that small scale entry by new firms is feasible, especially for applications which require relatively modest sunk cost investments, e.g., residential heating, and to serve local markets that are near sources of propane supply. However, there are formidable obstacles to any entrant (or set of entrants) attaining sufficient scale and scope to pose a significant competitive threat to SPI in the post-merger environment. The obstacles include potentially substantial sunk-cost investments and the need to gain a reputation as a reliable supplier. For some customers, the limited financial resources possessed by small retailers may disqualify the latter as potential suppliers, especially if those customers are concerned about the ability of suppliers to assume liability insurance functions. Contractual commitments of customers to SPI also limit the potential sales available to entrants, and, therefore, the latters' ability to attain a minimum efficient scale of operations relatively quickly. In short, the economic conditions surrounding entry, the historical entry experience, and the parties' own views on the condition of entry, lead us to conclude that potential entry is not a sufficient threat to render unprofitable price increases initiated by SPI.

VI. SUMMARY AND CONCLUSIONS REGARDING THE LIKELY COMPETITIVE EFFECT OF THE PROPOSED MERGER

The proposed merger's impacts upon competition, and subsequent prices and service levels will be conditioned by the pre-existing structure of specific geographical markets, the physical location of those markets, the customers' energy use applications and the size(s) and location(s) of customers. This heterogeneity seriously constrains our ability to draw precise market-by-market conclusions.

Notwithstanding these caveats, we believe that there is sufficient evidence to conclude that market structure changes associated with the merger, in conjunction with pre-merger behaviour make it likely that competition will be reduced in the relevant markets discussed in this report.

In addition, in markets where a fringe of existing propane suppliers will remain, various factors mitigate against rapid and substantial expansion of supply from that fringe, including sunk costs associated with expanding supply, contractual restrictions and consumer loyalty to established producers.

So-called "hit and run" entry is not a robust deterrent to higher prices. Hit-and-run entry would not be viable for a number of reasons. One is that many customers look for reliable and continuous service from their propane suppliers. An entrant who quickly bolted from the market might find it very difficult to win back customers upon re-entry. Moreover, if hit-and-run entry was fairly widespread, new entrants in general might come to be viewed as highly unreliable which would make the entry process more costly and difficult for all new firms. Moreover, while entry on a small scale may not oblige new suppliers to incur absolutely large sunk costs, entry at a scale sufficient to supply large accounts, especially multi-region accounts, does imply the need to make absolutely large investments, much of which may be of a sunk cost nature. Contractual obligations to existing suppliers and the disadvantages of not enjoying an established reputation among potential consumers limit the ability of new entrants to expand substantially, and thereby render price increases by incumbent firms unprofitable within a relatively short period (e.g., within two years.).

We are unable to offer a precise estimate of the price increases that will likely be experienced, on average, in the relevant geographical markets. Certainly, an upper-limit is set by the net costs of switching to alternative fuels; however, it seems more likely to us that competition from alternative suppliers of propane will constrain price increases in most markets more than the availability of alternate fuels. In any case, in most applications, a propane price increase would have to significantly exceed the 5% threshold before triggering widespread switching to alternate fuels.

At issue, then, is whether a 5% price increase by SPI would be thwarted by the action of propane incumbents or entrants. Given our analysis of the changes in seller concentration, the pre-existing levels of competition, and the limits to expansion of supply in the short term (i.e., 2 years or less), we believe that a relatively modest price increase (say, 5 percent) would be sustainable in the relevant geographical markets considered in this report. We believe a greater increase would be sustainable over a longer period of time for a substantial number of customers depending upon application and/or supply requirements.

Appendix 1: Switching Costs

1. Residential heating: propane to heating oil

The following is based upon conversion to heating oil of a propane fired, forced air furnace servicing an 1,800 sq. ft. home built in the 1970s. The cost to replace the furnace would range from $2,500 to $3,000. The installation of an oil tank and fuel lines would cost between $1,200 and $1,500. In addition, a heating oil furnace would require an "A" vent as opposed to the less substantial "B" vent required for propane fired furnaces. A 25 ft. length of "A" vent would cost $800. The cost of installing the vent is difficult to estimate without knowing the configuration of the house and the siting of the furnace.

Table A-1
Costs of Converting a Propane Fired Forced
Air Furnace to Heating Oil

	Low	High
Furnace plus installation	$2,500	$3,000
Fuel tank plus lines	$1,200	$1,500
Venting	$800	$800
Total	$4,500.00	$5,300.00

The decision to switch away from a propane fired furnace in order to minimize costs (i.e., ignoring other considerations such as safety, aesthetics, and environmental issues) would depend upon a number of factors including: the magnitude of the propane price increase; the cost of the next best fuel; the amount of fuel consumed; the discount rate; and the customer's time horizon. The decision to switch would involve a comparison of the immediate switching costs (i.e., the furnace conversion) to the present value of the anticipated stream of increased fuel costs. To perform this calculation, the following assumptions are made.

- Annual consumption is 2,573 litres of propane. [1]
- At the time of the propane price increase the consumer is indifferent between propane and oil heating.[2]

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[1] This is the average consumption per house heating installation from SPI's Market Assessment 1995-1996 documents.

[2] This assumes that when considering all product attributes (e.g., price per unit, BTU content, heat conversion efficiency, emissions, safety, and aesthetics) the customer just marginally prefers propane.

- The discount rate is 8%.
- The consumer has a 15 year time horizon.
- The current price of propane is 40 cpl.

Applying these assumptions to increased fuel costs associated with a range of propane price increases, indicates that switching would make sense only in the case of a very significant price increase.

Table A-2
Present value of increased costs with different propane price increases
(Residential space heating)

Price increase	Present value of cost increase
10%	$880.94
20%	$1,761.88
30%	$2,642.82
40%	$3,523.77
50%	$4,404.71
60%	$5,285.65

2. Commercial heating: propane to heating oil

A similar sort of analysis can be carried out for commercial heating. Two variables would certainly be different. Commercial customers consume more propane on average, and conversion costs would be higher. We have not estimated conversion costs. However, for the purposes of the calculation, we assume that a commercial user of propane fired equipment consumes 6,383 litres[3] per year and that the initial price of propane is 40 cpl. The present values of increased costs with different propane price increases are set out in Table A-3.

[3] This is the average consumption per commercial heating installation from SPI's Market Assessment 1995-1996 documents.

Table A-3
Present value of increased costs with different propane price increases
(Commercial space heating)

Price increase	Present value of cost increase
10%	$2,185.41
20%	$4,370.81
30%	$6,556.22
40%	$8,741.62
50%	$10,927.03
60%	$13,112.44

Even if conversion costs for a commercial establishment were in the same range as for a residence, a significant price increase would be required to induce switching to heating oil.

3. Forklift truck: propane to electricity

Given the regulatory constraints on using diesel or gasoline powered forklift trucks indoors, the most likely conversion would be from propane to electricity. The attractiveness of switching from propane to electricity would depend upon the size of the forklift truck, and its annual fuel consumption. For the sake of the calculations the following assumptions are made.

- Machine type: 5,000 lb., cushion tire, 188 inch lift, 3 stage mast, single speed
- Machine cost: electric, new, $36,000; propane, new, $27,500
- Propane consumption: 33.3 lbs. per 8 hour day; 20.8 lbs. per 5 hour shift
- Days worked: 250 per year
- Time horizon: 15 years
- Discount rate: 8%
- Current price of propane: 40 cpl.

The 5,000 lb. class of machine is commonly used for indoor work. Indeed, larger, diesel or gasoline powered trucks are commonly used for outdoor applications. Annual fuel consumption depends upon the number of hours worked per day, the number of days worked per year, and the working conditions (e.g., loads and grades). Forklift trucks are not usually worked continuously during a day. A normal usage is 5 hours per day. This is particularly relevant to a comparison between propane and electric trucks because the batteries used in electric trucks tend to lose their charge after 5 or 6 hours (i.e., they lose power). It is possible to run an electric truck for a full 8 hour shift but this would likely

require a backup battery which would add considerably to capital expenses (batteries cost from $4,000 to $5,000).

Table A-4 sets out the present value of the increased costs assuming different propane price increases. Estimates are shown for both a 5 hour and 8 hour daily running time.

Table A-4
Present value of increased costs with different propane price increases
(Forklift Truck)

Price increase	Present value of increased costs (5 hr/day)	Present value of increased costs (8 hr/day)
10%	$1,585.48	$2,536.77
20%	$3,170.97	$5,073.55
30%	$4,756.45	$7,610.32
40%	$6,341.93	$10,147.09
50%	$7,927.41	$12,683.86
60%	$9,512.90	$15,220.64

Propane forklift trucks cannot be converted to electricity. Switching would require the purchase of an electric truck. Given that a new electric truck would cost in the vicinity of $36,000, it is unlikely that even substantial propane price increases would trigger widespread switching in the medium term.[4]

[4] Obviously when the propane truck required replacement, the switching decision would be different. At that juncture the operator would have to compare the lifetime costs of propane versus electric.