

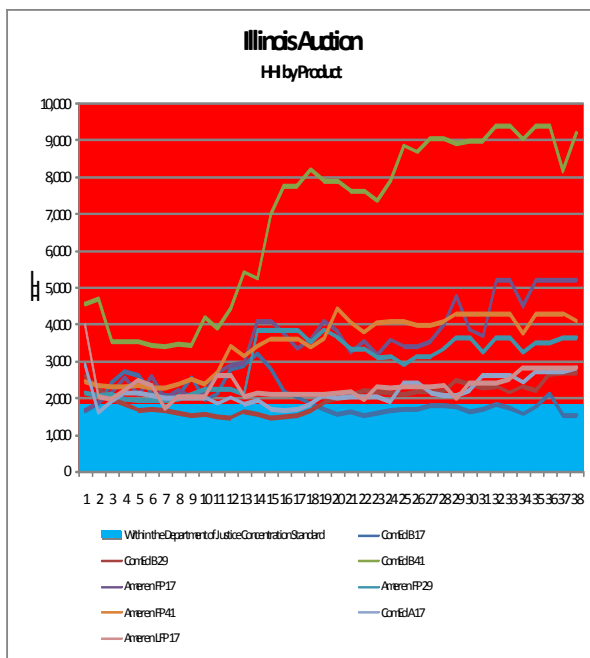
# Research, Litigation and Negotiations

September 2007

McCullough Research

<http://www.mcculloughresearch.com>

## Advisor to the Illinois Attorney General



In 2006, Illinois conducted a declining price auction for suppliers for the customers of Commonwealth Edison and Ameren (Illinois Power). The auction prices were high compared to surrounding bilateral markets (NYMEX Northern Illinois Hub). In March 2007, the state’s Attorney General filed a FPA 206 Complaint with FERC based on our analysis of the auction’s bids and results. On August 28, 2007, the governor signed a settlement agreement providing for a \$1 billion-dollar refund to ratepayers and replacing the auction process with a more durable purchasing approach.

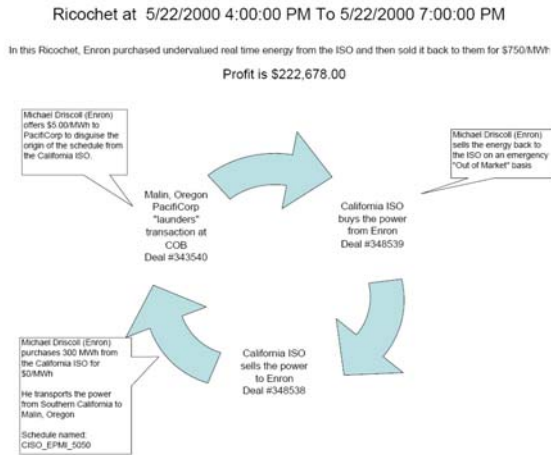


## Expert Witness for Snohomish Public Utility District No. 1 in EL03-137/180

In the FERC proceeding, EL03-137/180, we discovered and analyzed the so-called “Enron trader tapes” for our client, and discovered Enron’s secret accounting data. Our ability to process documents enabled us to review literally millions of Enron documents over four years of litigation. Our testimony was cited repeatedly in the FERC hearing officer’s order in 2007 that recommended a \$1.6 billion-dollar disgorgement for Enron victims of the Western Market Crisis of 2000-2001.

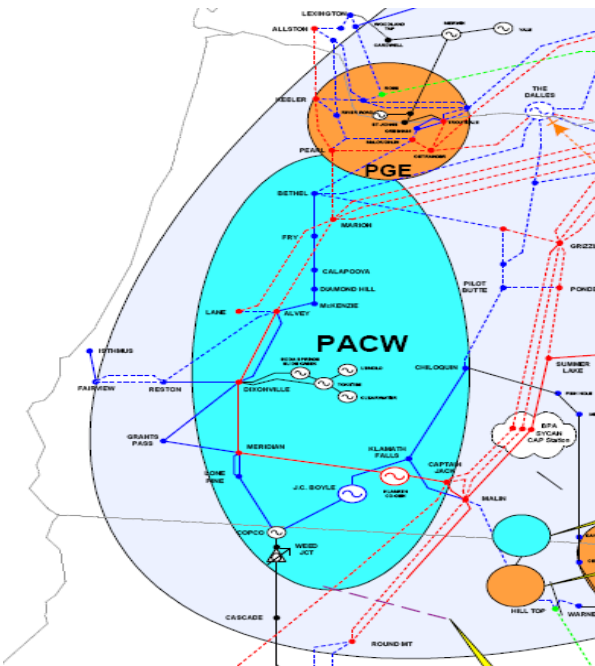
## PA02-2-000 and the Western Market Crisis

Robert McCullough's January 30, 2002 presentation to the U.S. Senate Energy and Natural Resources Committee is credited with initiating FERC's PA02-2-000 investigation into market manipulation in the WECC. In the course of the PA02-2-000 investigation, we worked for the U.S. Department of Justice, the Oregon Department of Justice and the Montana Department of Justice. We also provided support to the California PUC, the Oregon PUC, the Washington Attorney General, and the Alberta market monitor on aspects of the case. Our testimony before the California Senate Select Committee was the basis of much of the later work on Enron schemes.



## Advisor to the City of Portland in the Investigation of Portland General Electric

During 2000 and 2001, Enron's subsidiary, Portland General Electric, apparently manipulated its wholesale power transaction reporting in order to maximize tax exposure in Oregon. The proceeds of the taxes were then transferred to Enron where they were offset by anomalous tax avoidance schemes. We were retained to assist the City in the investigation of this reporting irregularity, as well as other possible wholesale trading violations.





## Expert Witness for Antara Resources in Enron Litigation

In the late 1990s, Enron entered into natural gas transactions with an independent gas producer, Antara Resources. McCullough Research was retained to review the transaction and the probity of Enron's representations in the negotiation and termination of the contract. In the course of the litigation, it became clear that Enron had hidden its failing financial condition, preventing Antara from terminating the contract in a timely manner. The litigation was settled on favorable terms for Antara.



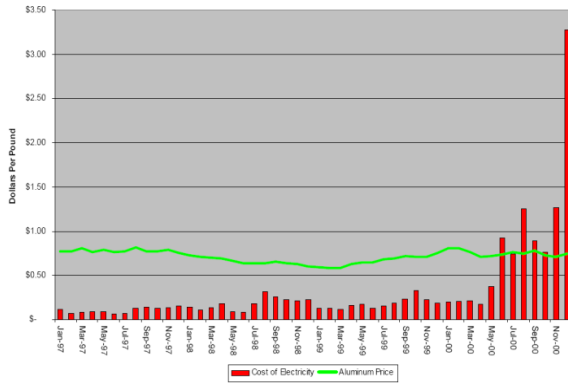
## Expert Witness for Federated Rural Electric Insurance Company and TIG Insurance in Cowlitz Insurance Litigation

In the summer of 2002, a small hydroelectric project, Swift #2, failed catastrophically. The project was subject to a complex series of agreements between its owner, Cowlitz PUD, and PacifiCorp. We were retained to review the contractual history and to provide testimony in the litigation between Cowlitz PUD and its insurers.

## . Expert Witness for Factory Mutual in Northwest Aluminum litigation

Northwest Aluminum pursued claims against its insurance carrier for a number of electric interruptions during the late 1990s. McCullough Research was retained to determine the cause of output reductions in 2000 and 2001. We determined that the output reductions were part of the capacity reduction agreements between Northwest Aluminum and Enron. Our testimony was responsible for the successful resolution of this dispute.

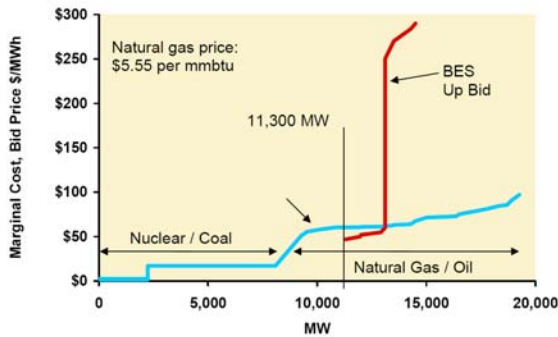
Comparison Between the Price of Aluminum and the Cost of Electricity



## Expert Witness for Texas Commercial Energy and Utility Choice

In the spring of 2003, real time prices in ERCOT increased from \$50/MWh to \$990.01/MWh without notice. TCE, a small retailer in the ERCOT market, was driven into bankruptcy. Our analysis of the market manipulation was the basis of a successful settlement of TCE's federal anti-trust case. We discovered that TXU's role as a pivotal supplier was a central cause of the apparent crisis. We also discovered "Mr. \$990.01", a continuing hockey-stick bidder in the ERCOT market, whose inexplicable bids (1 MWh at \$990.01) frequently sets real-time prices for Texas.

Marginal Cost v. BES Up Bid  
January 25, 2003 10:00 am



### Expert Witness for Alcan in Powerex/Enron/Alcan Arbitration

In the late 1990s, McCullough Research assisted Alcan in its settlement of the long-standing Kemano litigation between Alcan and the province of British Columbia. As part of that settlement, Enron entered into a long-term contract with Powerex on Alcan's behalf. After Enron's bankruptcy, Powerex pursued Alcan to guarantee the transaction. We had a central role in the extensive litigation surrounding the contract and its valuation, eventually helping Alcan reach a successful settlement.



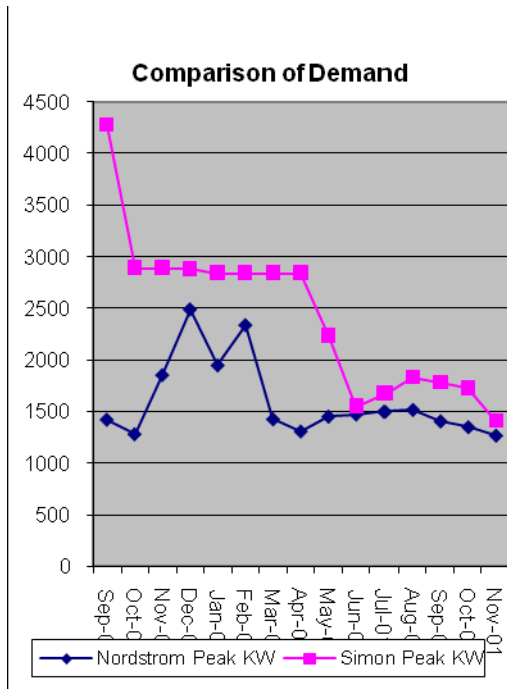
### Expert Witness for Lloyd's of London in SECLP Insurance Litigation

During the early 1990s, Enron and Smith built a combined cycle plant in the Dominican Republic. Operations at the plant were an operational, financial, and environmental disaster. Lloyds of London retained us as part of its defense against claims that the failures at the unit were subject to a claim on the maritime insurance. Our review discovered extensive evidence of Enron's failure to operate the plant competently, including the use of incorrect fuels, impure water supply and contract administration issues.



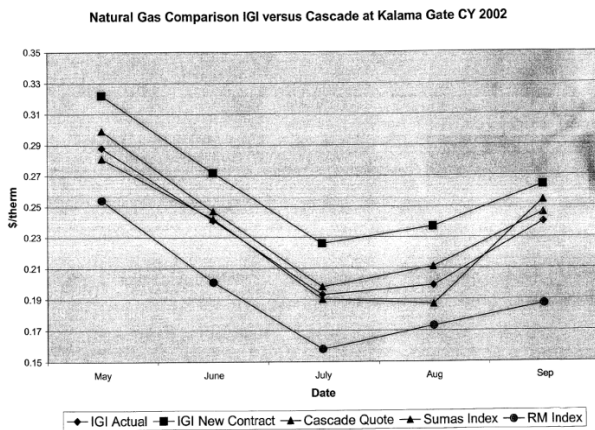
### Advisor to Nordstrom

McCullough Research assisted Nordstrom with several projects, including the solution to billing disputes in Illinois and Minnesota; billing forecasts nationally; advice on contract negotiations in Texas and California; and long-term energy forecasting and budgeting.



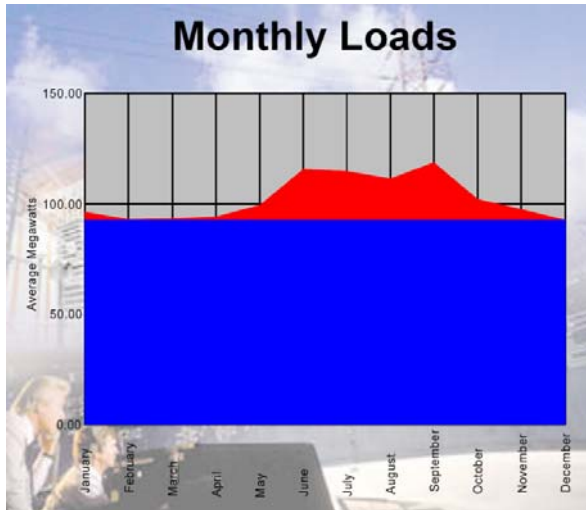
### Advisor to Steelscape Steel on power issues in Washington and California

McCullough Research advised Steelscape on power contract issues in both Washington and California through the Western Market Crisis of 2000-2001. Steelscape's California contract did not allow it to interrupt operations during system crises (a common problem in California's convoluted regulatory environment.) In Washington, Steelscape was able to negotiate such features with its wholesale supplier, and was eventually able to negotiate a new power contract with the local utility after the Western Market Crisis ended.



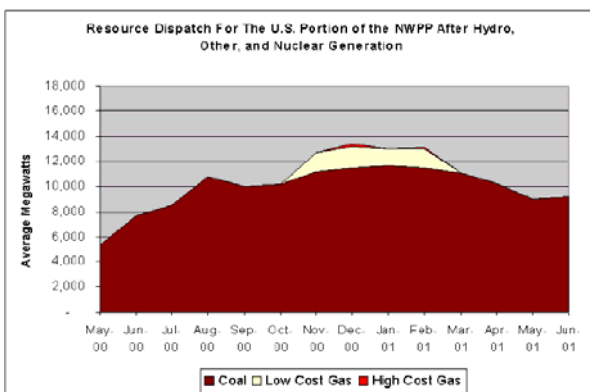
## Advisor to VHA Southwest on power purchasing

From the onset of retail access, McCullough Research has advised VHA Southwest on a number of purchases with energy suppliers in ERCOT. The purchases allowed VHA Southwest's members to avoid much of the turmoil surrounding the ERCOT market implementation.



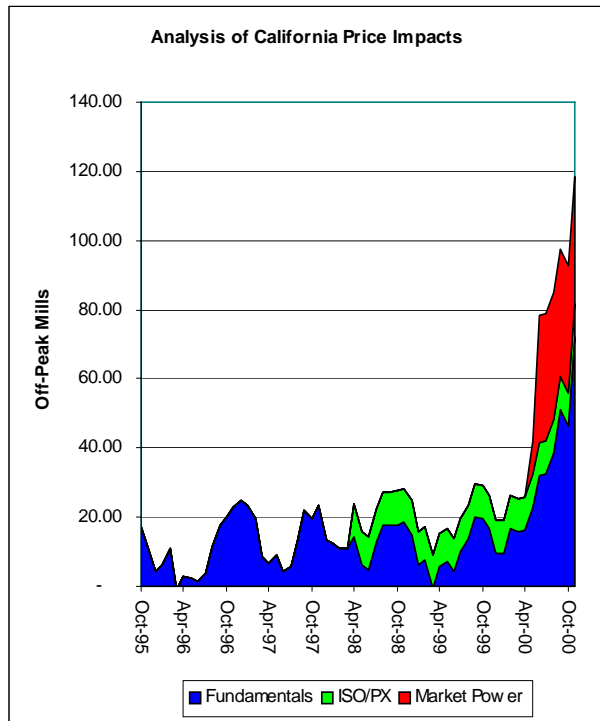
## Expert Witness for City of Seattle, Seattle City Light and City of Tacoma in FERC's EL01-10 Refund Proceeding

In the summer of 2001, FERC held a very hasty proceeding to determine the degrees of Pacific Northwest refunds resulting from the Western Market Crisis of 2000-2001. This proceeding reflected the Commission's political sense at the time that the issues were fleeting and of little importance. We filed testimony in the 2001 hearing on behalf of Seattle and Tacoma. FERC's order in this proceeding was overturned in August 2007 by the Ninth Circuit Court of Appeals.



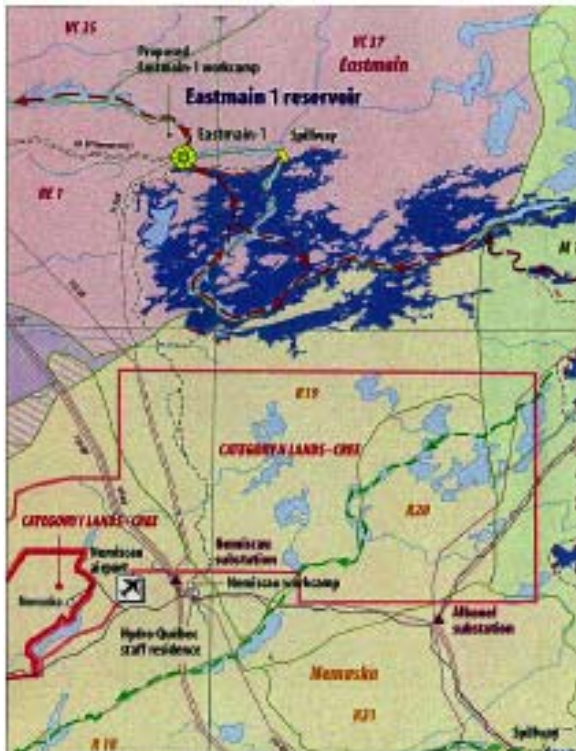


## Expert Witness for Wah Chang



Oregon Metallurgical's Wah Chang facility has asked Oregon state court and the Oregon Public Utilities Commission to overturn a power contract with PacifiCorp that ties price to the COB Dow Jones index. Our analysis of PA02-2-000 discovery has revealed the high involvement PacifiCorp's traders had with Enron's Death Stars and Ricochets (trading schemes) in 2000 and 2001.

## Grand Council of the Crees (Eeyou Istchee)



The James Bay Crees have aboriginal rights over land in Québec equal in land area to the nation of France. Cree lands are blessed with a half-dozen rivers on the scale of the Missouri and Columbia Rivers in the U.S. One of these, the Rupert, is currently being developed in partnership with Hydro-Québec. The provincially owned utility, one of the most secretive utilities in North America, convinced provincial courts to classify a variety of operating issues, including hydroelectric operations. We were retained to support the Crees. We recently finished reverse engineering the utility's classified operating data and have reproduced its top-secret NEPTUNE hydroelectric planning model.

## Entergy Tariff Negotiations

Bayou Steel Corporation retained McCullough Research to support its litigation/negotiations for a facility outside of New Orleans. Bayou has several issues with Entergy Louisiana, including competitive threats, facilities charges and operating costs for fuel and purchased power. We completed a preliminary review of Entergy's operations and a detailed review of electric power rates and contracts for the steel mini-mill industry throughout the Southern U.S. Initial results are encouraging – leading Entergy to admit to numerous FERC Form 1 errors. Entergy has retreated from several aggressive positions and discussions are currently underway.



## Quebec Resource Development

McCullough Research completed a successful negotiation between Hydro-Québec and the Betsiamites, an aboriginal group with property rights in the Outardes, Manicouagan and Bersimis river valleys. This area, approximately the size of Vermont, contains North America's third-most significant hydroelectric resource. The negotiation resulted in an equity position for the Betsiamites in three new projects. Unlike earlier aboriginal settlements, the Betsiamites are full equity partners with the provincial utility with rights to export their share of the projects to U.S. markets if prices warrant.

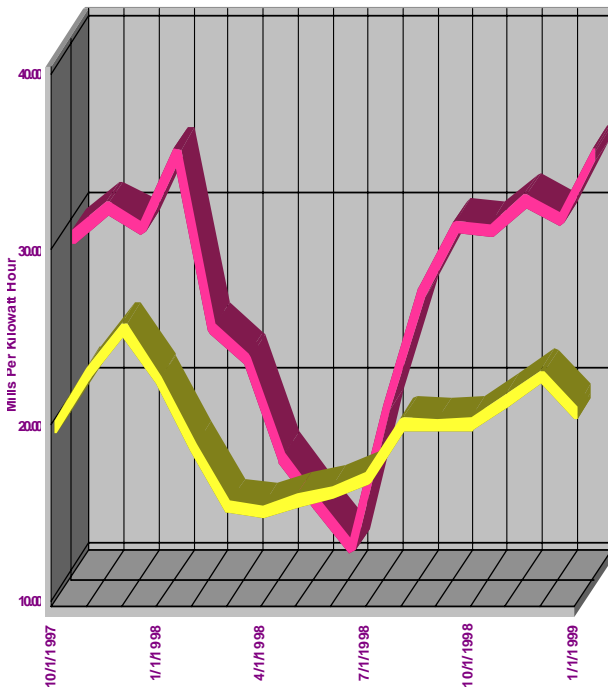


## Nucor Steel



McCullough Research is supporting Nucor Steel's efforts to build a new mill on the North Spit near Coos Bay, Oregon. Our responsibilities include electric and gas supplies and support for the construction of the new transmission projects required to expand service to the area. Since the 1930s, the Oregon coast has failed to capture significant economic development opportunities due to the absence of access to either natural gas or electricity. The South Coast Reinforcement Project promises to change the prospects in this region.

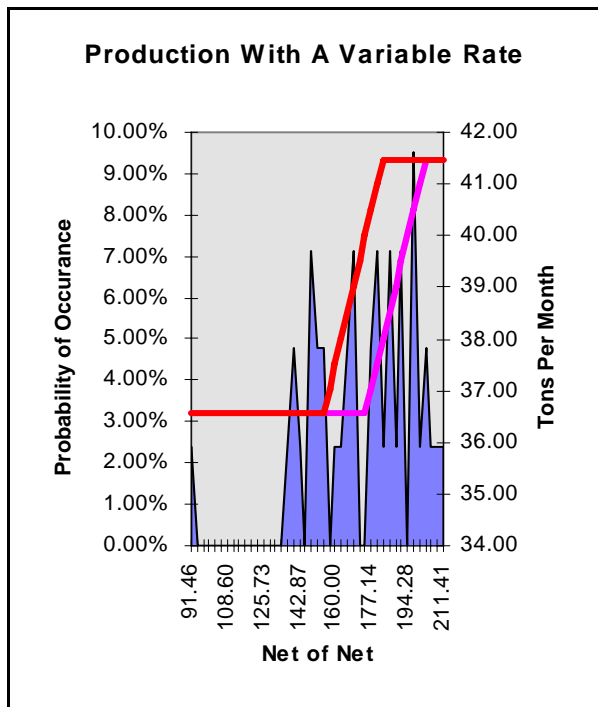
## Tenaska/BPA Litigation



McCullough Research was the primary energy consulting firm in the massive Tenaska/BPA arbitration in 1997 and 1998. Our responsibilities included: evaluating BPA's computer models and testimony; comparing BPA claims with our 500,000-page database of BPA studies and documents, price and operational forecasting; and providing testimony at several levels of the proceeding. Tenaska's \$600 million award was one of the largest ever achieved against the U.S. federal government in a breach of contract case.

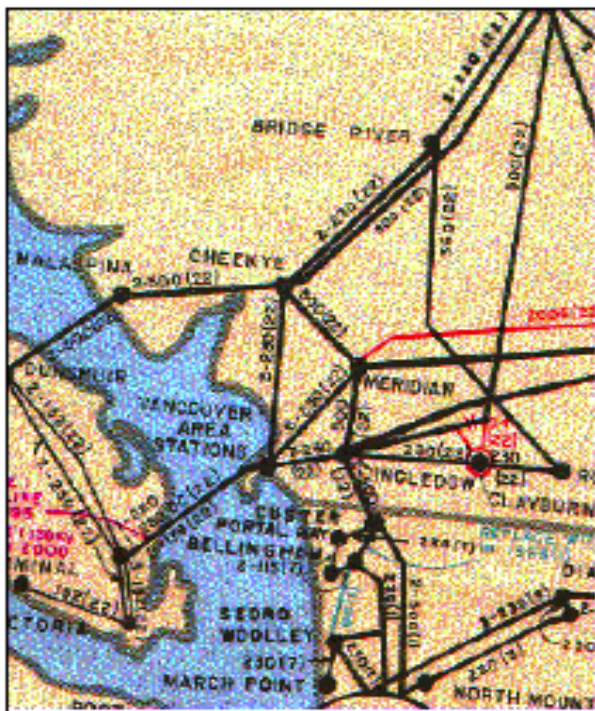
## Cities of Tacoma and Seattle

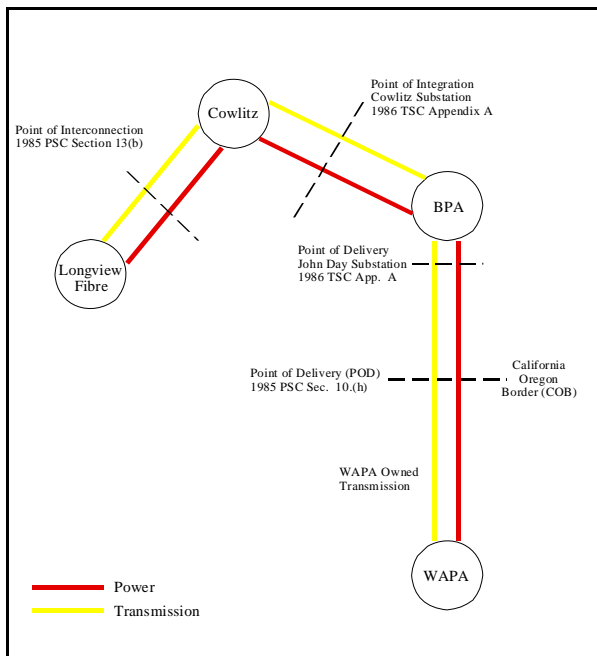
McCullough Research was retained by two of the largest municipal utilities in North America to explore open access solutions for their industrial customers. The issues were complicated by the existence of a complex, old-fashioned requirements contract between Northwest utilities and the Bonneville Power Administration. The challenge was to craft a new industrial customer relationship that allows access to the market while preserving the utilities' net revenues. In addition, the new relationship had to avoid triggering language in the BPA requirements contract that would forbid market access.



## PSE Tariff Negotiations

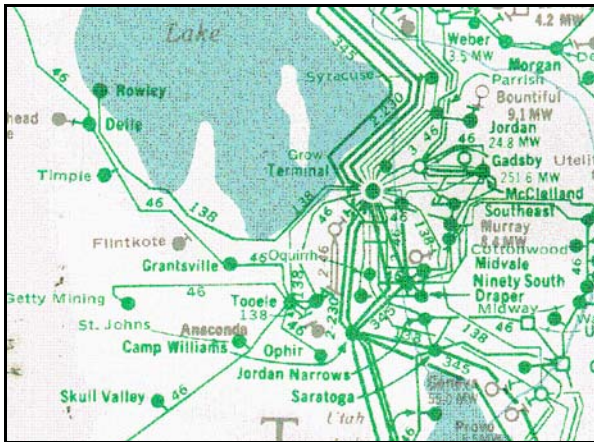
Georgia Pacific's world-class paper mill in Bellingham, Washington, competes with other paper producers whose electric rates are 30-40 percent lower. The serving utility has the highest industrial electric rates north of the California border. We crafted and carried out a by-pass strategy that would bring the mill to the market with reductions in electric rates of 40-50%. The final week before contracts with new suppliers were signed, the serving utility met the market prices. The tariffs developed for the Georgia Pacific mill have recently been filed in Washington as the basis for Puget Sound Energy's rates to all major industrial customers.





### Longview Fibre/WAPA Litigation

McCullough Research supported Longview Fibre in its successful settlement of a contract dispute with the Western Area Power Administration concerning its export contracts from the mid-1980s. The dispute never reached court after we helped WAPA realize that its litigation position was inconsistent with its public statements in several other power proceedings in California and the Pacific Northwest. A central tool in the negotiations was our online database of energy documents. We were able to search and find documents filed by WAPA that would have proved embarrassing if the litigation had proceeded.

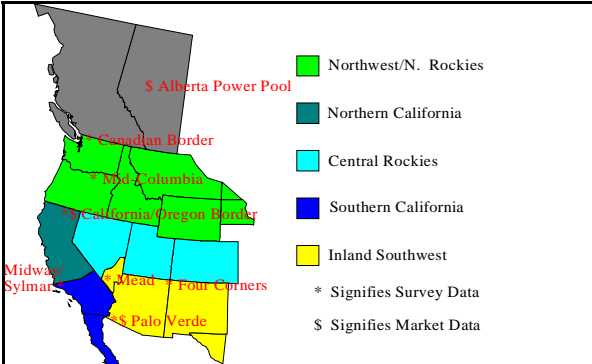


### Magnesium Corporation of America

Over the past fifteen years, Magnesium Corporation of America has retained us to conduct a review of Pacific Power's power cost allocations, mathematical models and loss calculations. Over a series of negotiations, our work has helped maintain MagCorp's role as a low-cost supplier in this competitive industry.

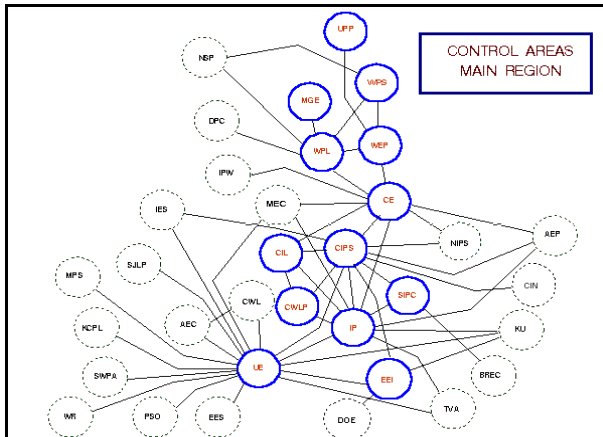
## Basis and Correlation Studies

The results of a regional study used to support our clients in power negotiations from Alberta to Mexico were published in the October 1996 issue of *Public Utilities Fortnightly*. The study analyzed price indices throughout the WSCC and calculated correlations and basis differentials on a pair wise basis. The results allowed market participants to analyze alternative price indexing proposals for efficiency and fairness. Work based on this study was later used in setting open market tariffs throughout the state of Washington and in specific negotiations in California, Utah, Oregon and Arizona.



## Industrial Supply RFPs

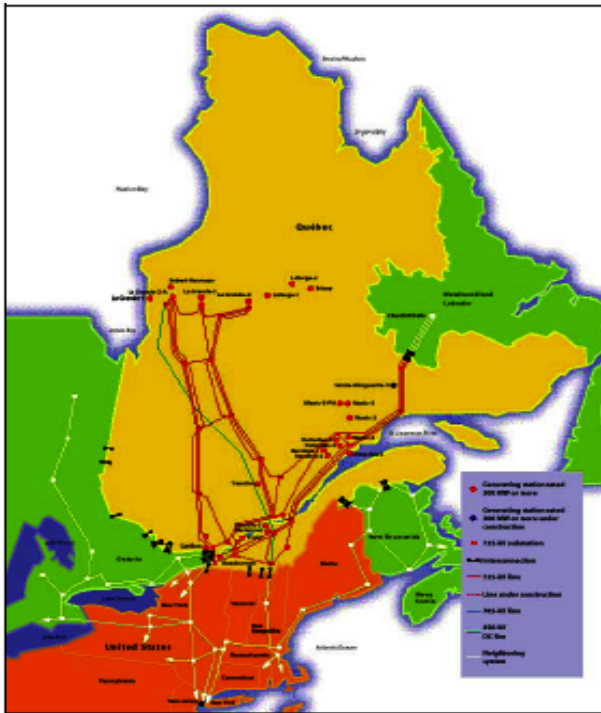
McCullough Research is often retained to conduct numerous RFPs. In 1995, we surprised the electric industry by releasing three RFPs in the Pacific Northwest for 320 MW. Later, two were concluded with new power contracts for 220 MW. We have conducted RFPs in the Desert Southwest and the Midwest. The diagram to the left shows the control areas for MAIN (the reliability area serving Illinois and Wisconsin), where we released an RFP for 60 MW in Commonwealth Edison's service territory. We received over 12 qualified responses with offers implying rate reductions for our clients from 60-80%.





## Steel Mini-Mill Power Supplies

McCullough Research was retained in four different instances to negotiate new electric power contracts with steel mini-mills. At the time, the U.S. domestic steel sector was undergoing rapid expansion. The new contracts included: access to the spot energy markets; adjustable rates; and ingot storage schemes. With expected loads in the 150 MW range, such transactions represented a major change to both the finances and operations of the serving utilities. Our experience in steel negotiations in the Midwest has been invaluable in allowing us to review all sides of these emerging issues.



## Great Whale River Policy Debate

Throughout the 1990s, McCullough Research was active in the complex litigation between aboriginal peoples and the environmental community and the Province of Québec to determine whether additional mega-hydroelectric projects should be constructed in the James Bay region. These projects were proposed without environmental, economic or human rights reviews. Costing over \$13 billion, they constituted a major financial commitment. Our Hydro-Québec Planning Model (HQPM) was publicly disseminated in Québec and formed the basis for much of the debate concerning the projects' cost effectiveness. In 1995, the provincial government at the time cancelled the projects when it became clear that both Quebec and Canada would be required to submit to extensive environmental reviews.

## Illinois Resource Acquisition Rulemaking

McCullough Research is currently representing the resource development subsidiary of Public Service Electric and Gas in the development of rulemakings for resource acquisition and environmental externalities in Illinois. The state's troubled regulatory environment has largely excepted if from the impacts of PURPA. Current regulatory proposals may make Illinois a leader in environmental impacts on resource acquisition.

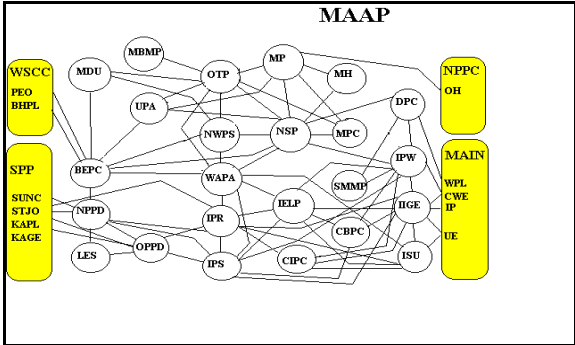
### Rulemakings On Resource Acquisition Issues

Competitive Bidding

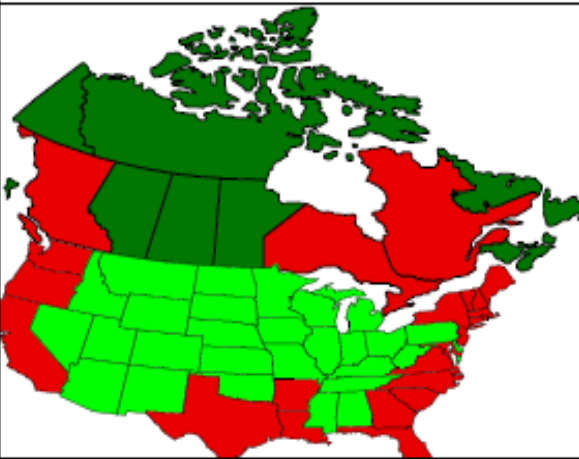
Environmental Externalities

## Industrial Plant Siting

McCullough Research undertook marketing research on a petrochemical-based cogeneration opportunity in the Upper Plains states. The location of the project lent itself to a diversity approach where summer and winter capacity could be marketed to different utilities.

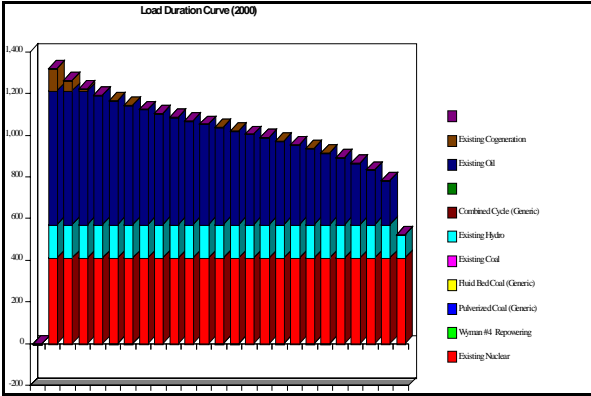




<p><b>Power Contract Negotiations</b></p> <p>BPA Requirement Contracts with Investor Owned Utilities, Public Agencies, and Direct Service Customers</p>	<p><b>BPA Power Contract Negotiations</b></p> <p>McCullough Research advised Portland General Electric on the negotiation of 140 contracts between Bonneville Power Administration and other parties in the Pacific Northwest in the mid-1990s. The contracts covered future requirements needs, conservation, environmental issues, transmission and resource acquisitions. The negotiations addressed issues such as retail wheeling; product unbundling; DSM incentives; marginal cost pricing at the wholesale level; and environmental surcharges.</p>
 <p>A map of the United States and Canada. The northern part of Canada is shaded in dark green. The western and southern parts of the United States, including California, Arizona, and Texas, are shaded in red. The central and northern parts of the United States, including the Great Plains and the Midwest, are shaded in light green.</p>	<p><b>Fuel Choice Advising</b></p> <p>McCullough Research was retained to provide power planning and other services for plant repowering negotiations with utilities in New England, a major Wall Street bank and fuel suppliers. Possible repowering options included PSE&amp;G, Commonwealth Electric and Central Maine Power. The collapse of OPEC prices in the 1980s offered opportunities for changing the fuel choices and dispatch position for several aging, oil-fired units.</p>

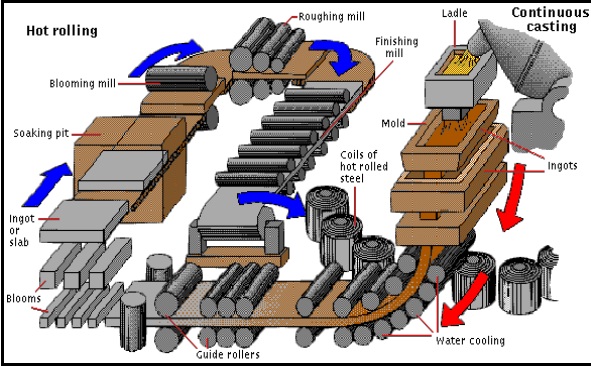
## Orimulsion

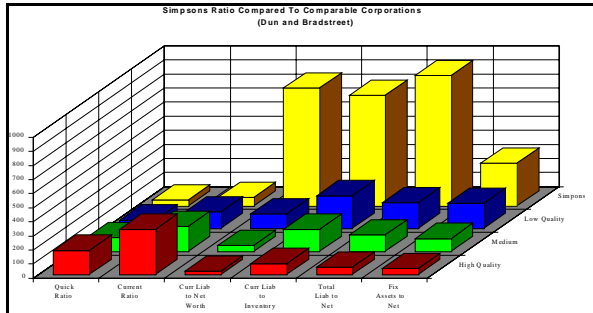
McCullough Research participated in the negotiations between a major Wall Street financial house, the Kennedy family’s energy brokering firm and the Venezuela national oil company for brokering rights to as much as one trillion barrels of fossil fuels. The successful negotiations involved work in both hemispheres.



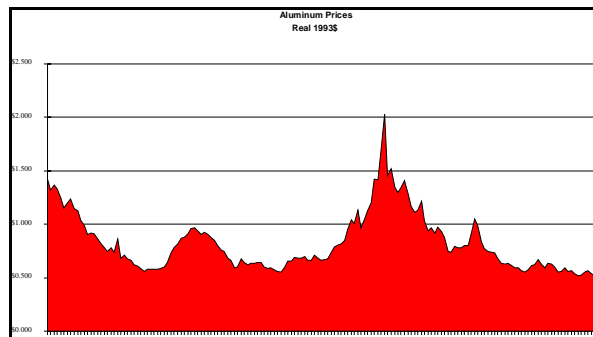
## Nucor Mini-Mill Siting

McCullough Research undertook an extensive review of the U.S. steel industry and its resurgent mini-mill sector as part of industrial rate negotiations for a mill expansion and a planned new “Crawfordsville” mill. The mini-mill sector represented a strong growth opportunity for utilities with ocean transport and competitive electric rates. Although the sector lacks the energy intensity of the aluminum or industrial gases industries, each installation was in excess of 100 MW.

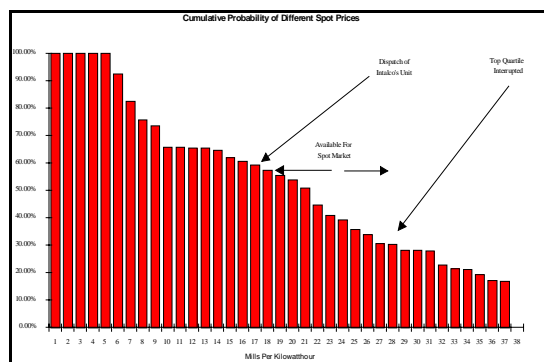




McCullough Research has supported power cost negotiations with a large, diversified paper manufacturer. Pulp and paper plants are often among the largest loads on the average utility system. Total thermal loads (translated into kWh) can be as high as 500 MW. This particular project helped develop an innovative contract approach to offset the financial weakness that existed in this industry.



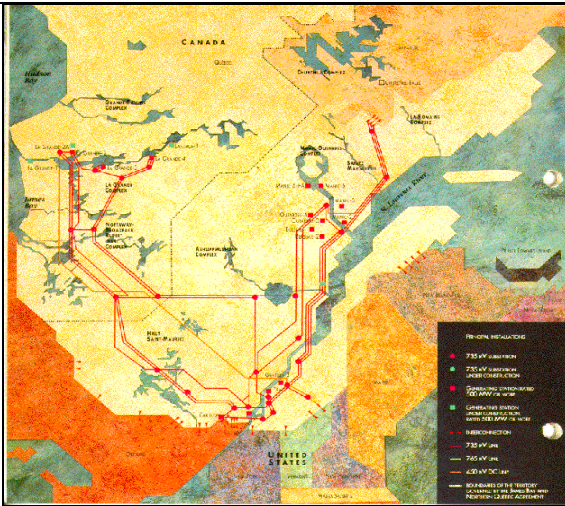
McCullough Research has a long history of involvement in electricity issues concerning the aluminum industry. One project involved developing new rates for the industry for a Midwest utility. We have also conducted a review of special rates for this industry in Québec.



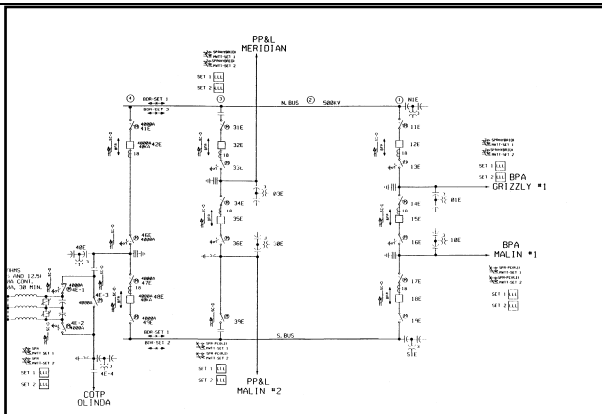
McCullough Research developed a concept that allowed resource development to dovetail consistently with the interruptibility provisions of power contracts to Pacific Northwest aluminum smelters. The concept involved the “storage” of interruptions during poor energy years. Marketing of the products developed from the remaining energy and capacity were facilitated by the relatively low economic costs after meeting interruptible demands.



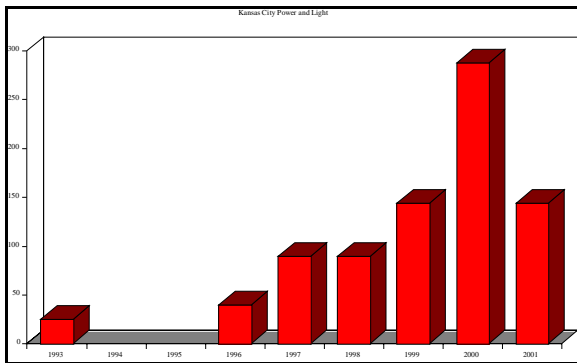
McCullough Research was active in the marketing of excess energy from the new Genessee Unit at Edmonton Power. The energy from this unit, combined with surplus capacity from Pacific Northwest utilities, is planned to be the basis of sales to northern California public agencies. The challenge of this marketing project arises from the complexity of transmission arrangements among Ontario, British Columbia, the Pacific Northwest and California.



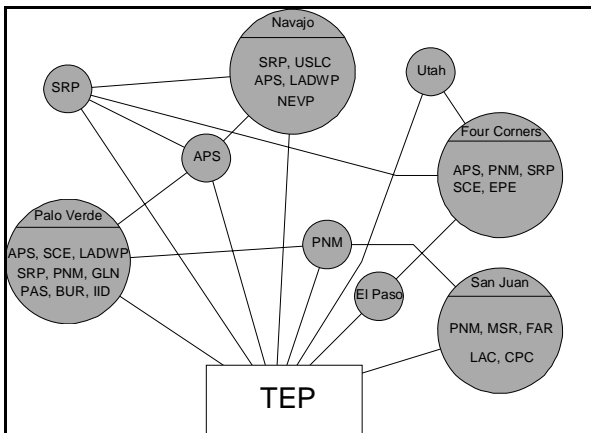
We helped to market a large block of energy from surplus and repowered units in New England to Québec. This unusual approach of bringing U.S. energy to Canada was made possible by the size of the competitively priced surplus in New England. The plan was to implement a twenty-year transaction with substantial hydroelectric storage and firming.



We evaluated the interconnection points in the Pacific Northwest for CMS, the Michigan electric and gas utility. Interconnection is a complex technical and economic issue on the West Coast, especially where ownership of strategic lines and substations may reflect many years of litigation and negotiation.



McCullough Research completed a review of power markets in ERCOT (Texas) and SPP (Lower Plains states and Arkansas). At the time, the rapidly evolving regulatory situation in Texas was of considerable interest to developers, especially with the proposed disallowances at TNP and Texas Utilities.



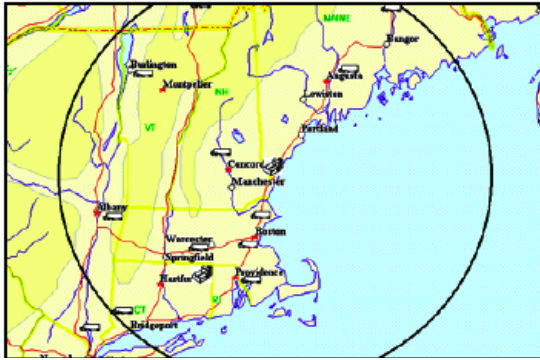
The failing financial fortunes of several utilities in the Southwest, including Public Service of New Mexico, Texas New Mexico Power, El Paso and Pinnacle, was the focus of intense analysis by Wall Street. We were retained to provide resource planning and power marketing expertise concerning restructuring opportunities. In general, the recovery of stranded assets in the California market was a central analytical issue in each study.



We produced two marketing analyses for developers interested in the California market as well as work for Edmonton Power on potential customers in northern California. California's avoided cost advantages had eroded over time, and additional environmental constraints increased the marginal costs of new generation at the same time that new transmission was becoming available.

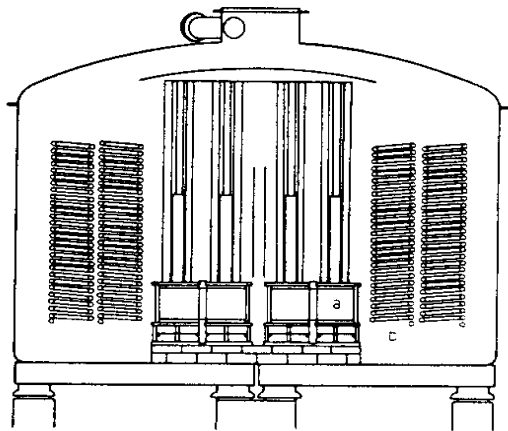
## Maine Public Utilities Commission

We produced a complex power contract review for the Maine PUC. Central Maine Power had provided a competitive tariff to meet competition from Northeast Utilities. A customer, Airco Gases, characterized itself as a “footloose” industry. The facts, however, indicated that even non energy-intensive industries can be tied to local customers and be unwilling to move in response to power rate differentials.



## Atochem Negotiations

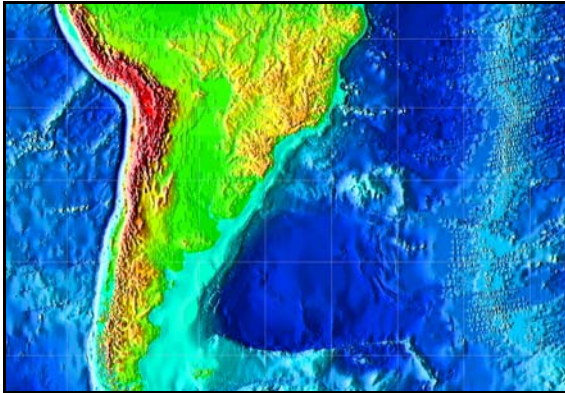
Atochem Chemicals, a French multinational chemicals concern, threatened to move its operations from Portland, Oregon, to Tacoma, Washington, in response to power rate differentials. We were retained to investigate the economics of its product, sodium chlorate. Atochem and Portland General Electric concluded a new power contract for the Atochem facility.



**Figure 15.** Huron electrosynthesis system with integrated electrolysis cells  
a) Chemical reactor; b) Cooling coils

McCullough Research conducted an extensive hydroelectric review of proposed Ontario Hydro developments on the Abitibi and Matagami rivers. Changes had been proposed that would affect both the firm energy and capacity at a series of dams along the two rivers. Our review, based on sophisticated stochastic hydro models developed for the Pacific Northwest, recommended that the changes proposed would not be economic. The utility later cancelled or postponed the projects.





McCullough Research was retained in several ventures in Latin America, including a review of Brazil for Enron, and as a power planning and transmission advisor for a consortia bidding on the Costanera gas-fired station in Argentina. We have also reviewed independent development efforts in Colombia and Mexico.



### Trojan Nuclear Station Closure

McCullough Research was closely involved in the economic and financial studies supporting the closure of the Trojan Nuclear Station. We reviewed the economic history of the plant, preparing the long-term results and forecasts for steam generator repair versus closure and recovery.

**Commonwealth Edison  
Braidwood Settlement Proposals**

Rounds one, two, and three of the  
Braidwood settlement efforts

### Braidwood Settlement

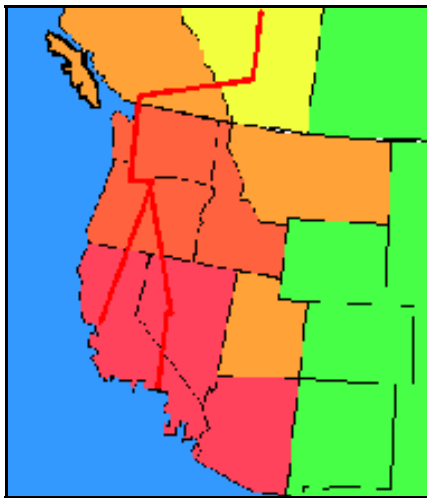
In 1986, Commonwealth Edison proposed an unregulated spin-off of its troubled Braidwood nuclear units. We were retained to review the proposal and recommend improvements. We participated in the negotiations and continued to advise state commission staff throughout this complex case.

## Stranded Plant Options In Illinois

Bringing market solutions to regulatory problems

### Illinois Commerce Commission

McCullough Research was retained by the Chair of the Illinois Commerce Commission to propose market solutions to the continuing stranded plant issues in Illinois. Our extensive review included an analysis of restructuring both of the state's utilities and the regulatory process that had brought them into serious load/resource imbalance.



The Pacific Northwest has always been known for extensive transmission both within the region and to neighboring regions. Total high voltage transmission to Canada and California exceeds 9,000 MW, far larger than the average utility. We were retained to explore the profit opportunities in such expansions and to recommend business arrangements that allowed investors to enter the transmission business.

## Utility Restructuring In California

### Implementation of AB-1890

The California Public Utilities Commission undertook an investigation of open access for the state's industrial, commercial and residential customers. We were retained to represent Portland General Electric in the proceeding until implementation in April 1998.