

Jonathan Dunlap
Environmental Law of South Carolina
Professor Connolly, Adjunct Professor Guild
University of South Carolina School of Law
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South Carolina and the Fuel Cell Economy

I. INTRODUCTION

i. Purpose of Paper

The purpose of this paper is to investigate the kind of economic development conditions that are necessary to bring the fuel cell industry to South Carolina, and place us at the forefront of what could potentially be a revolution in environmentally friendly energy production. After a brief introduction, I will first describe a current theory on economic development. The theory compares the traditional incentives states uses to attract business with more progressive incentives. I will then examine four case studies of local governments that made efforts to attract the high technology industry using a combination of these incentives. I will give an analysis of the lessons learned from those case studies, and will then turn to the economic development environment in South Carolina. I will end the paper with an analysis of how the lessons learned from the case studies apply to our local laws and policies. The point of the paper is to explore the kinds of conditions and laws that will be effective in providing a successful framework for South Carolina's new fuel cell economy.

ii. What are fuel cells?

Fuel cells are a new generation of technology that offers a potential advantage in terms of an environmental energy source.¹ Hydrogen combines with oxygen to create a chemical reaction that gives off electricity.² Currently, the most practical source of hydrogen is from fossil fuels, such as natural gas, gasoline, methane, and propane.³ The fuel cell energy creation process yields only trace amounts of such greenhouse gases as sulfur oxides (SO_x) and nitrogen oxides (NO_x), and relatively low levels of carbon dioxide (CO₂).⁴ The environmental advantage of this technology is that the levels of those greenhouse gases are greatly reduced compared to conventional energy production.⁵ Eventually, if hydrogen can be effectively isolated and maintained by renewable resources, the only by-products of the fuel cells energy production would be water and heat.⁶

Before fuel cells become a viable environmental energy alternative, there are serious problems to solve. Fuel cell energy production that uses fossil fuels is not cost effective. Typical systems often cost more than \$5,000 per kilowatt, which greatly exceeds the typical benchmark of most energy generation developers of \$1,000- \$1,500 per kilowatt.⁷ Further, fuel cell production that uses pure hydrogen is also a highly

¹ USC Research and Health Sciences, *Fuel Cells*, (July, 2004) [hereinafter Fuel Cells] <http://www.sc.edu/research/pdf/FuelCells.pdf>.

² CT Fuel Cell Center, What Is Fuel Cell Technology, http://www.ctfuelcell.uconn.edu/cgfcc_faq_fc.htm#q1 (last visited February 27, 2005).

³ Massachusetts Technology Collaborative, Fuel Cells, <http://www.mtpc.org/cleanenergy/cells.htm> (last visited Apr. 12, 2005).

⁴ *Id.*

⁵ *Id.*

⁶ *Id.*

⁷ *Id.*

inefficient process: it takes roughly four units of energy to isolate the hydrogen used to get one unit of energy from a fuel cell.⁸ In order to isolate hydrogen without relying on fossil fuels or nuclear energy, we currently have to depend on other relatively inefficient energy resources such as wind and solar in the hydrogen isolation process.⁹ It is specifically these problems that fuel cell researchers are trying to solve.¹⁰

iii. South Carolina as Emerging Industry Leader

South Carolina is currently poised to be a leader in the emerging fuel cell economy.¹¹ The Industry/University Cooperative Research Center for Fuel Cells (I/UCRC) at the University of South Carolina (USC) boasts alliances with high profile industrial partners, such as BASAF, DANA Corporation, General Motors Corporation, Westinghouse Savannah River Company, Dupont Fuel Cells and Eastman Chemical Company.¹² In the summer of 2003, the National Science Foundation chose USC to lead its fuel cell research.¹³ This established USC as the host of the nation's first I/UCRC for

⁸ David Barber, Institute for the Analysis of Global Security, "Hydrogen or Electricity? A Nuclear Fork in the Road," <http://www.iags.org/n032805t2.htm> (last visited Apr. 12, 2005).

⁹ *Id.*

¹⁰ *E.g.*, USC Center for Fuel Cell Research, *Research Topics*, http://www.che.sc.edu/centers/PEMFC/research_topic_1.html; *see id.*

¹¹ C. Grant Jackson, *USC Coup to fuel S.C. economy*, *The State*, June 15, 2003, at <http://www.che.sc.edu/centers/PEMFC/thestate.html>.

¹² USC Research and Health Sciences, *Fuel Cells*, (July, 2004) [hereinafter *Fuel Cells*] <http://www.sc.edu/research/pdf/FuelCells.pdf>.

¹³ *USC Chosen by National Science Foundation to Lead Nation's Fuel Cell Research Initiative*, June, 2003, at http://www.sc.edu/usctimes/articles/2003/2003-06/fuel_cell_announcement.html.

fuel cells.¹⁴ In September 2004, the U.S. Department of Energy awarded a \$2,158,370 grant to the I/UCRC to complement its research.¹⁵

The expectations surrounding the research center are very optimistic.¹⁶ John Goodman, chairman of the fuel center's industry advisory board, compares the potential for fuel cell industry growth in South Carolina to that of the semiconductor industry explosion in Austin, Texas.¹⁷ In the 1980's, the University of Texas began collaborating with several private high tech firms on semiconductor research.¹⁸ The result was Austin's emergence as a premier location for high-tech industries. By 1993, over 20 major firms had located in Austin.¹⁹

Professor John Van Zee, the director of the I/UCRC, estimates that fuel cell energy production could potentially take over %5 of the United States energy market, which is a \$200 billion industry.²⁰ Access to this emerging market would therefore provide the I/UCRC with increased resources to help solve the problems that prevent fuel

¹⁴ *Id.*

¹⁵ *Graham Announces \$2 Million Hydrogen Research Grant for USC*, Sep. 29, 2004, at <http://swampfox.ws/members/swampfox/velocity.nsf/0/d16f2dd54d8d564588256f30006f6c4d?OpenDocument>.

¹⁶*Id.* See also, C. Grant Jackson, *Hydrogen Energy Heats Up*, June 17, 2003 [hereinafter *Hydrogen Energy*] at http://www.che.sc.edu/centers/PEMFC/thestateNEWS_nsf_061603.html.

¹⁷ *Hydrogen Energy*, *supra* note 16.

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ John Van Zee, *National Science Foundation Industry/University cooperative Research Center for Fuel Cells Prospectus*, (March, 2003), http://www.che.sc.edu/centers/PEMFC/ProspectusMarch2003_1.pdf. This estimate is conservative in that it does not take into account the potential impact on the sale of electric vehicles and consumer electronics. *Id.*

cells from becoming an efficient, environmentally friendly technology.²¹ The question on the minds of the leadership at the I/UCRC is how to recreate the kind of success seen in Austin, bring in the resources of the public sector, and realize the potential that this environmentally friendly technology has to offer.²²

II. EFFICIENCY OF ECONOMIC DEVELOPMENT INCENTIVES: SUPPLY SIDE INCENTIVES VS. DEMAND SIDE INCENTIVES

In his thesis, “‘Answering the Call of Business’: The Political Economy of Economic Development Incentives in South Carolina,” Daniel Crabtree investigates a current economic development theory. He divides economic development incentives into two broad categories, calling them “supply side incentives,” and “demand side incentives.”²³ He suggests that supply side incentives are, for the most part, less cost effective for a state than demand side incentives.²⁴ Crabtree suggests that supply side incentives exist as a result of reactionary policies,²⁵ short-term thinking,²⁶ and self-perpetuity.²⁷ He also

²¹ USC Center for Fuel Cell Research, *Research Topics*, http://www.che.sc.edu/centers/PEMFC/research_topic_1.html; *see id.*

²² *See*, E-mail from Dr. John Van Zee, Director NSF-I/UCRC for Fuel Cells, Department of Chemical Engineering, University of South Carolina (Feb. 6, 2005, 11:11:52) (on file with the author). (“How can all of the research edge that SC has in the area of fuel cells be translated into jobs and local wealth for the next energy economy [?]”). *Id.*

²³ Daniel James Crabtree, “Answering the Call of Business”: the Political Economy of Economic Development Incentives in South Carolina (1998) (unpublished M.A. Thesis, University of South Carolina) (on file with the University of South Carolina Library).

²⁴ *Id.* at 12.

²⁵ *Id.* at 14.

²⁶ *Id.* at 15.

²⁷ *Id.* at 16.

recognizes that not all of these incentives fall neatly into a demand or supply side category.²⁸

Crabtree concentrates on the history of incentives in South Carolina. At the time of his study, the kinds of incentives that would fit the category of demand-side incentives were just emerging.²⁹ There is therefore very little discussion of their history and efficacy.³⁰

i. Supply Side Incentives

In short, supply side economic development incentives are aimed at lessening investor production costs.³¹ Examples include: “corporation tax breaks, property tax waivers, right-to work legislation, jobs tax credits, [and] land subsidies...”³² These incentives are used to place the state in a competitive position compared to other states in terms of their economic development.³³ The concept is that lower production costs will attract more business.³⁴ This will result in greater employment, the first benefit, and greater employment will lead to increased tax revenue, the second benefit.³⁵

²⁸ *Id.* at 21.

²⁹ *Id.* at 75.

³⁰ *Id.* at 11-13, 73-79.

³¹ *Id.* at 13. “Production” as classically defined by economists. Production cost = cost of land, labor, and capital. *E.g.* Dictionary.LaborLaw.com, factors of production, *at* http://encyclopedia.laborlawtalk.com/Factors_of_production.

³² *Id.*

³³ *Id.*

³⁴ *See id.*

³⁵ *Id.*

Crabtree maintains that, in practice, these kinds of incentives end up costing the state more than they make in the long run.³⁶ He uses South Carolina's economic development program from 1980 to 1997 as an example. During this time period, "South Carolina has spent more than ninety percent of its economic development budget on supply-side measures."³⁷ Crabtree points to a study indicating that, towards the beginning of this time period (in 1984), South Carolina collected approximately 26.1 percent of its taxes through business.³⁸ Over the next fourteen years, the business tax revenue continued to decline.³⁹ South Carolina's policy of cutting taxes to increase business therefore leaves something to be desired.

He then discusses a study promulgated by the Strom Thurmond Institute, non-profit research group at Clemson University. The study, entitled, The Fiscal Sustainability of the South Carolina Revenue and Expenditure System, 1997-2010, was published in 1997.⁴⁰ It found that "tax incentives given to businesses in South Carolina will cost state and county governments \$240 million dollars by 2010, more than ten times their cost today."⁴¹ The study also found that in South Carolina, "only forty percent of

³⁶ *Id.* at 12.

³⁷ *Id.* at 28, *citing*, Boeckelman, Keith (1997), "The Evolution of State Economic Development Policies: A Budgetary Perspective," Paper Presented at the Annual Meeting of the Southern Political Science Association, (Nov., 1997).

³⁸ *Id.* at 39.

³⁹ *Id.*

⁴⁰ The Strom Thurmond Institute, The Fiscal Sustainability of the South Carolina Revenue and Expenditure System, 1997-2010, (latter version, <http://www.strom.clemson.edu/teams/ced/fsp/fiscust.pdf>) [hereinafter, the Strom Thurmond Institute].

⁴¹ Crabtree, *supra* note 23.

announced jobs actually come to fruition.”⁴² This is another indication that supply-side incentives alone are insufficient for a comprehensive economic development plan.

Moreover, it is not clear that these incentives play a significant role in actually attracting businesses in the first place. Crabtree cites a number of studies that examine how influential supply side incentives are relative to other economic factors, and they are found to have a minimal impact.⁴³ “A number of surveys find taxes and financial assistance to be consistently ranked in the bottom one-fifth or one-tenth of locational factors mentioned by business respondents.”⁴⁴ While admitting significant methodological flaws in these studies, Crabtree emphasizes that, in the final analysis, these incentives have at best an uncertain effect.⁴⁵ Crabtree provides a local example, the BWM plant in Spartanburg, to support his point: “...the role of supply-side financial breaks [in BMW’s decision to come to South Carolina] was small, according to BMW executives.”⁴⁶

A further flaw with supply side incentives is the possibility for corruption. In South Carolina, this problem is more than just theoretical. In July 1990, the FBI launched “Operation Lost Trust,” to investigate the violation of federal laws, including anti-racketeering and anti-extortion laws in the South Carolina legislature.⁴⁷ Twenty-

⁴² *Id.* at 41-42, *citing*, The Strom Thurmond Institute, *supra* note 40 and The State, 11/7/97. (There was a violent political backlash against the study, which resulted in the institute revising the language so as to be more diplomatic. The latter version included such softening language as, “the state enjoys more jobs and higher income than it would in the absence of such incentives.”)

⁴³ *Id.* at 9.

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ *Id.* at 35.

⁴⁷ *Id.* at 71.

eight legislators, lobbyists, and state officials were indicted, mostly for accepting bribes from a fictitious corporation to vote on a pari-mutuel bill.⁴⁸ The fallout also uncovered a \$22 million tax break, benefiting only twenty-one companies, which was passed because of bribery within the legislature.⁴⁹ More recently, in February of 1998, the Associated Press uncovered a story where \$200,000 of funding earmarked for Special Schools training was spent on whitewater rafting trips for BMW employees.⁵⁰

If Crabtree is correct in saying that supply side incentives are inefficient, problematic, and only marginally attractive, then why do they exist?

The deeply entrenched supply side mentality in South Carolina dates back to the turn of the 20th century.⁵¹ As agriculture began to decline, the textile industry crept in to take its place.⁵² After a bloody confrontation between union workers and mill owners in the Great Textile Strike of 1934, the pro-union movement in South Carolina effectively lost momentum.⁵³ The anti-union mentality in South Carolina would come to typify the state's economic development platform.⁵⁴ Essentially, the state would advertise its cheap

⁴⁸ *Id.*

⁴⁹ *Id.* at 72.

⁵⁰ *Id.* at 40.

⁵¹ *Id.* at 66.

⁵² *Id.*

⁵³ *Id.* Workers loyal to management at a Honea Path textile mill opened fire on protesting employees, killing seven and wounding seventeen. *Id.*

⁵⁴ *See id.* at 67-70.

labor to attract textile-manufacturing companies.⁵⁵ The textile industry would continue to affect South Carolina's economic development incentives throughout the 1960s.⁵⁶

In the 1960's the state began to compete with other states not only in terms of cheap labor, but also in terms of tax incentives.⁵⁷ However, the major thrust that pushed South Carolina in a supply-side direction was the loss of Fort Howard Paper to Georgia in 1988.⁵⁸ Fort Howard promised a large industrial project that would supply \$400 million in investments and over 1,000 new jobs.⁵⁹ At the last minute, the company chose Georgia over South Carolina, and local policy makers were convinced the decision was due to the fee-in-lieu of property tax incentive that Georgia could offer.⁶⁰ The legislature subsequently passed a suite of supply side incentives.⁶¹

In 1992, when BMW was looking to invest in the Southeast, Governor Campbell created a supply-side incentive package worth between \$130-\$145 million for the German automaker in order to compete with the surrounding states.⁶² When Mercedes selected South Carolina as one of 15 potential sites, the competition spurred further supply side competition.⁶³ Governor Campbell's incentive package, set to meet

⁵⁵ *See id.*

⁵⁶ *Id.* at 68.

⁵⁷ *Id.* at 31.

⁵⁸ *Id.* at 33

⁵⁹ *Id.*

⁶⁰ *Id.* at 33-34.

⁶¹ *Id.*

⁶² *Id.* at 35.

⁶³ *Id.*

Alabama’s offer, would have South Carolina paying \$200,000 per job in incentives.⁶⁴

Governor David Beasley even further increased supply-side incentives as a result of bargaining with Nucor Steel and Michelin.⁶⁵

Therefore, Crabtree’s short answer to the question of “why do supply side incentives exist?” is politics.⁶⁶ BMW, Mercedes, Nucor, and Michelin all have one thing in common: they are industry giants, or as Crabtree puts it, “big fish.”⁶⁷ Politicians know the value of turning to the constituents and telling them that they have attracted one company that will invest a dazzling amount of money in the state and employ battalions of South Carolina workers.⁶⁸ The short-term effect is readily apparent and the general public has difficulty in establishing the causal link of the long-term deterrent.⁶⁹ Further, the competition for these “big fish” is self-perpetuating: states tend to expand rather than to contract these programs in order to stay competitive with other states implementing the same policies.⁷⁰

ii. Modified Supply Side Incentives

Crabtree’s study does not universally condemn supply side measures. He makes reference to a separate study to show how supply side incentives can become cost

⁶⁴ *Id.* at 36.

⁶⁵ *Id.* at 36-37.

⁶⁶ *Id.* at 5. (“This work examines sub-optimal incentives from such a political perspective, the assumption being that collectively rational cost-beneficial calculations have been inhibited by self-interested, politically driven, motivations.”).

⁶⁷ *E.g., id.* at 3.

⁶⁸ *See id.* at 3.

⁶⁹ *Id.* at 12.

⁷⁰ *Id.* at 17.

effective through modifications.⁷¹ The authors of this study suggest four performance based modifiers which can be included in a supply side incentive that would render it cost effective: “rescissions (cancellation of subsidy agreement with a firm for non performance), clawbacks (recovery of all, or part of, past subsidy costs), penalties (punishment for non performance, for example with tax foreclosure measures) and recalibrations (adjustment or calibration of the level of a subsidy to reflect a new projected benefit stream).⁷² As these modifiers imply a cost-benefit analysis, they promise to be more effective from the state’s perspective.⁷³

iii. Demand Side Incentives

Demand side economic development incentives are government policies aimed at expanding local state markets.⁷⁴ Examples include: “specialized education and technical training schools, export consortiums, high technology cluster development, venture capital groups, and overseas trade offices.”⁷⁵ Local governments put these incentives into place in order to capitalize on new and expanding markets.⁷⁶ Demand-side economic planning also emphasizes the human development side of human capital.⁷⁷ “Demand-side incentives,” are typified by government policies that add value to a company’s

⁷¹ *Id.* at 21, *citing* Larry Ledebur and Doug Woodward, Adding a Stick to the Carrot: Location Incentives with Clawbacks, Rescissions and Recalibrations, *Economic Development Quarterly*, vol. 4, no. 3, August 1990, at 221-37.

⁷² *Id.*

⁷³ *Id.*

⁷⁴ *Id.* at 13. (Compare this definition with “supply-side” economic incentives, which are policies aimed at lessening investor production costs, at *id.*).

⁷⁵ *Id.*

⁷⁶ *Id.* at 11.

⁷⁷ *Id.* at 43.

production.⁷⁸ Instead of providing cheaper labor, these incentives improve the quality of the laborer.⁷⁹ Instead of the state providing a company cheaper real estate, it provides a more valuable location.⁸⁰ While the supply-side incentives permit a company to make a cheaper widget, the demand-side incentives allow a company to make a better widget.⁸¹

From the perspective of the state, supply-side incentives tend to put the state in a position subservient to the business: they promote the interest of the individual business over the interest of the state.⁸² By contrast, demand-side incentives create a leadership role for the state in creating a market: they become partners with business instead of being subservient to the business.⁸³ Demand-side incentives turn the state into an “entrepreneur,” exploring new markets⁸⁴ and expanding existing markets.⁸⁵

Crabtree mentions several other advantages of demand-side incentives. First, insofar as they create a fertile marketplace, the effect is long-term.⁸⁶ Second, they improve the quality, as well as the quantity, of the new jobs.⁸⁷ This is due in part to the fact that demand side-incentives are effective in attracting high technology jobs,⁸⁸ which

⁷⁸ *See id, generally.*

⁷⁹ *See id, generally.*

⁸⁰ *See id, generally.*

⁸¹ *See id, generally.*

⁸² *Id.* at 13.

⁸³ *Id.*

⁸⁴ *Id.* at 11.

⁸⁵ *Id.* at 7.

⁸⁶ *Id.*

⁸⁷ *Id.* at 3.

⁸⁸ *Id.* at 11.

in turn increase per-capita income.⁸⁹ They also improve a state's ability to respond to emerging markets.⁹⁰

iv. Case Studies

One flaw with Crabtree's study is that he fails to back up his discussion of demand side incentives with empirical evidence. This is understandable, given that, at the time of Crabtree's study, local economic development was still largely dominated by supply-side incentives.⁹¹ The year after Crabtree completed his study, the Georgia Institute of Technology (GIT) published its report, "Innovative Local Economic Development Programs."⁹² This report, set up as a series of case studies, examines the "innovative" economic policies a number of localities have begun to employ to encourage sustainability and development.⁹³ Insofar as fuel cells are an emerging technology, the most interesting part of the study is the one that examines "Responses to the New Economy."⁹⁴ This part of the study looks at the kinds of economic development policies four cities have put into place to promote growth in the high-technology area.⁹⁵ I

⁸⁹ See generally, Charles Ryan Hyler, Contribution of Technology to Local Economic Growth and Development (2002) (unpublished M.A. Thesis, University of South Carolina) (on file with the University of South Carolina Library).

⁹⁰ Crabtree, *supra* note 23, at 12.

⁹¹ *Id.* at 2.

⁹² Innovative Local Economic Development Programs, Georgia Institute of Technology, (1999) [hereinafter Innovative] available at http://www.eda.gov/ImageCache/EDAPublic/documents/pdfdocs/1g3_5f1_5finnovldep_2epdf/v1/1g3_5f1_5finnovldep.pdf.

⁹³ See generally, *id.*

⁹⁴ *Id.* at 89.

⁹⁵ *Id.* at 89-120. (All though the study actually looks at five local incentives, there is currently too little information on the fifth case study, Project Mercury, to be interesting for the analysis).

follow the discussion of these case studies with an analysis of the incentives in terms of Crabtree's categorizations.

a) Littleton, Colorado: the New Economy Program (NEP)

Littleton began the NEP in the late 1980's in response to a local economic recession.⁹⁶ The program shifted its local economic development strategy from the traditional model (read: supply side incentives), to a more demand-side model.⁹⁷ In the beginning, they did this by offering education and training programs.⁹⁸ They soon abandoned this strategy in favor of a program that focuses on providing local businesses with value-added information services.⁹⁹ The program eventually developed into a full-scale local information service:

Today, NEP provides information services...using research capabilities that include online databases, commercial CD-ROM databases, the internet, and a GIS. NEP information specialists can access over 100,000 online publications to provide market lists, competitor intelligence, new product releases, federal and state regulations, industry trends, and financial information in support of marketing and new-product development strategies. As a public service, the program also provides focus groups, GIS mapping to plot markets and competitors, marketing and mailing lists, and business plans for start-up firms.¹⁰⁰

The indicators suggest that the program is enormously successful. Littleton went from a recession to an employment growth of 8.7 in the years of 1990-1997.¹⁰¹

⁹⁶ *Id.* at 91.

⁹⁷ *See generally, id.*

⁹⁸ *Id.* at 92.

⁹⁹ *Id.*

¹⁰⁰ *Id.* at 92-93.

¹⁰¹ *Id.* at 93.

Recruiting in the fourteen years before the project attracted 4,000 jobs.¹⁰² “In little more than half that amount of time, [Littleton’s program] has produced 12,000 jobs, and not one penny has been spent on incentives.”¹⁰³ “Over 18 telecommunications companies, many of them home grown, have replaced aerospace as the dominant industry.”¹⁰⁴ The “economic gardening” approach used by Littleton now serves as a model for economic development nationally and internationally.¹⁰⁵

b) Worcester, Massachusetts: Massachusetts Biotechnology Research Park (MBRP)

In 1984, the city of Worcester, Massachusetts bought 75 acres of land for the development of a biotechnology research and industry park in order to deal with its declining textile industry.¹⁰⁶ The park provided business close proximity to local technical resources and higher education institutions.¹⁰⁷ In order to encourage collaboration between business and academia, senior executive officers of each of local higher educational institutions provided a contact for the tenants.¹⁰⁸ The business park provided flexible office space at rates much lower than neighboring Cambridge and Boston.¹⁰⁹ Massachusetts Biotechnology Research Institute (MBRI), a non-profit

¹⁰² Christian Gibbons, *Littleton Colorado, A Self Reliant Community in the Global Age*, New Village, Issue 2, Spring 2000, <http://www.newvillage.net/Journal/Issue2/2littleton.html>.

¹⁰³ *Id.*

¹⁰⁴ *Id.*

¹⁰⁵ Innovative, *supra* note 92, at 96. *See also*, CA St. U., San Bernardino, *Project Information Technical Assistance for Business*, <http://partnerships.csusb.edu/PITAB-economicgardening.htm#Economic%20Gardening%20and%20Gazelles>.

¹⁰⁶ *Id.*

¹⁰⁷ *Id.* at 98.

¹⁰⁸ *Id.*

¹⁰⁹ *Id.* at 97.

educational and research corporation, who also managed the park, established a venture capitol fund for local start-ups, which initially raised \$55 million.¹¹⁰ MBRI also managed business incubators. They offered start-ups discounted lease rates and providing business support services, such as monthly forms where resident companies present their products to fellow tenants, researchers, as well as private investors and companies.¹¹¹

The park has shown definite signs of success. It saw nearly \$250 million in private investment by the tenants.¹¹² The park also brought the city of Worcester \$3.5 million in annual property tax revenues.¹¹³ Further, the park's 17 tenants employ roughly 1,200 people on site.¹¹⁴ The park won the Association of University Research Parks Outstanding Research/Science Park Achievement Award in 1998.¹¹⁵ The city of Worcester also announced the groundbreaking for a second industrial park in September of 2003.¹¹⁶

On the down side, the study found that this job creation figure represented mostly relocated jobs as opposed to new ones.¹¹⁷ Another interesting observation was that the park's low rent did not have the appeal the creators had anticipated. "Biotechnology firms valued close proximity to researchers more highly than lower lease

¹¹⁰ *Id.* at 98.

¹¹¹ *Id.*

¹¹² *Id.*

¹¹³ *Id.*

¹¹⁴ *Id.*

¹¹⁵ Ass'n of U. Res. Parks, *AURP Annual Award Recipients*, at <http://www.aurp.net/more/awards.cfm>.

¹¹⁶ Press Release, *Groundbreaking Planned for South Worcester Industrial Park*, Sep. 16, 2002, <http://www.worcestermass.org/news/Press02/SWIP%20Groundbreaking.pdf>.

¹¹⁷ Innovative, *supra* note 92.

rates....According to Andrews [the park's executive director].... 'If we were a few miles closer to Boston, we would be double the size and completely full.'"¹¹⁸

c) Dayton, Ohio: The National Center for Industrial Competitiveness (NCIC) Capital Fund

The NCIC is a venture capital fund financed entirely by the public sector, borne of a deficit created by the U.S. Department of Defense's cutbacks in Dayton, Ohio in the early 1990's.¹¹⁹ It is targeted at local businesses that propose to convert defense-related technology to commercial markets.¹²⁰ The NCIC offers financing on terms that are more demanding than a bank, but that more favorable than a venture capitalist.¹²¹ The NCIC also helps businesses by reviewing, evaluating, and assessing their business plans, all for the cost of the application fee.¹²²

At the time of GIT's study in 1998, the NCIC had received 427 business plans.¹²³ Twenty-one had received financing, one had completely repaid the NCIC and one had maintained an equity position.¹²⁴ Fifty-nine other businesses received venture capital or private investment and sixty-three had received bank financing.¹²⁵ This is not to mention the unknown number of business the NCIC had aided by serving as a liaison to other services, such as federal and state technology transfer services, manufacturing assistance,

¹¹⁸ *Id.* at 99.

¹¹⁹ *Id.*

¹²⁰ *Id.*

¹²¹ *Id.* at 105.

¹²² *Id.* at 106.

¹²³ *Id.*

¹²⁴ *Id.* (NCIC's website reflects that the number of investments now totals twenty-nine. <http://www.ncicfund.org> (last visited March 3, 2005)).

¹²⁵ *Id.*

marketing assistance, and business development programs.¹²⁶ NCIC's application process is not simply one of acceptance or rejection.¹²⁷ To the contrary, NCIC will nurture the company along, improving its business plan, until either NCIC can invest or the company can find someone else who will.¹²⁸

Currently, the NCIC fund, which totals \$16 million in investments, is fully invested.¹²⁹ They have made 69 investments in 33 companies.¹³⁰ Its \$16 million in investments have been leveraged with at least \$60 million in co-investments.¹³¹

An important factor in NCIC's success is its independence from the political realm.¹³² NCIC's five employees are from the private sector and have extensive business credentials.¹³³ The fund also relies on private-sector processes and capabilities, which make it function more like a private venture capital fund than a state economic development organization.¹³⁴

d) Winchester, Virginia: Technology Zone

¹²⁶ *Id.*

¹²⁷ *Id.*

¹²⁸ *Id.*

¹²⁹ Telephone Interview with Bob Bowman, Vice President, The National Center for Industrial Competitiveness CapitalFund. (March 10, 2005).

¹³⁰ *Id.*

¹³¹ NCIC CapitalFund, Venture capital for early stage, technology based companies, *at* <http://www.ncicfund.org/> (last visited March 10, 2005).

¹³² *Innovate, supra note 91, at 107.*

¹³³ *Id.* at 104.

¹³⁴ *Id.* at 107.

The city of Winchester Virginia sought to revitalize its downtown historic area.¹³⁵ With a per-capita income slightly lower than the national average, the city began looking outward for help in the restoration and repair of its historic buildings.¹³⁶ The city is well placed to attract a high-technology clientele.¹³⁷ Not only does it have a close proximity to the hub of American internet development, Washington, D.C., and it has an extraordinary telecommunications infrastructure.¹³⁸ Winchester sits right on top of a “fiber optic trunk line that runs from Atlanta to Pennsylvania -- Valley Net -- and east into the Washington-Metropolitan Netplex.”¹³⁹ In 1996, the city took advantage of a newly passed Virginia legislation that authorized community level tax breaks and other traditional supply-side incentives to high-technology companies.¹⁴⁰

Initially, the results were optimistic. Winchester attracted Judd’s OnLine, which employed sixty people and invested \$750,000 to renovate an historic building downtown.¹⁴¹ CFW Communications also announced that it would move into Winchester’s technology zone, to employ 250 people around the clock, and invest almost \$5 million.¹⁴² Virtual Training Company (VTC) also moved its corporate headquarters

¹³⁵ *Id.* at 134.

¹³⁶ *Id.*

¹³⁷ *Id.*

¹³⁸ *Id.*

¹³⁹ Technozone VA, *Connectivity*, at <http://web.archive.org/web/20021014125351/www.techzoneva.org/connectivity.html> (last visited March 5, 2005).

¹⁴⁰ Innovative, *supra* note 92, at 116.

¹⁴¹ *Id.* at 118.

¹⁴² *Id.*

from Silicon Valley to Winchester.¹⁴³ After the study was published, Internosis, a national computer and Internet communications firm announced its relocation to the Technology Zone in September of 2000.¹⁴⁴

Although it is arguably too early to tell, Winchester's initiative has not worked as well as the other programs in the GIT study. Judd's OnLine moved out of the downtown area in October, 1999,¹⁴⁵ and was subsequently bought out by Blazenet in October, 2000.¹⁴⁶ CFW, which changed its name to nTelos in the summer of 2000,¹⁴⁷ declared bankruptcy in March 2003.¹⁴⁸ The city now only lists three technology companies on its website to promote its Technology Zone: Internosis, VTC, and BlazeNet (BlazeNet being located out of the technology zone).¹⁴⁹

v. Analysis

Competitive access to information is the strongest incentive these programs could offer the high-technology businesses. Littleton, Colorado's New Economy Program (NEP) abandoned its educational and training programs to put all of its resources into its

¹⁴³ *Id.*

¹⁴⁴ Drew Houff, *E-Commerce Company Will Locate Downtown*, The Winchester Star, Sep. 15, 2000, http://www.winchesterstar.com/TheWinchesterStar/000915/Business_internosis.asp.

¹⁴⁵ Winchesterstar.com, *Judd's Online Leaving Downtown*, Oct. 6, 1999, at http://www.winchesterstar.com/thewinchesterstar/991006/business_default.asp.

¹⁴⁶ Press Release, Blazenet, *Blazenet Acquires Judd's Online*, (Oct. 19, 2000), http://www.blazenet.com/pressroom/press_releases/oct192000.html.

¹⁴⁷ Robyn Fontes, *CFW Chooses New Name, New Logo*, The Winchester Star, Aug. 4, 2000, http://www.winchesterstar.com/TheWinchesterStar/000804/Business_cfw.asp.

¹⁴⁸ Drew Houff, *Regonal Telecom Soon May Emerge From Its Bankruptcy*, The Winchester Star, Aug. 19, 2003, http://www.winchesterstar.com/TheWinchesterStar/030819/Business_telecom.asp.

¹⁴⁹ Technozone VA, *Business Environment*, at <http://web.archive.org/web/20021014124643/www.techzoneva.org/business.html> (last visited March 10, 2005).

information services.¹⁵⁰ In retrospect, Worcester’s Biotechnology Research Park’s (MBRP) executive director recognized that the lower rent is immaterial, and that their close proximity to the researchers was their selling point.¹⁵¹ Tenants of the Worcester’s MBRP and participants of Littleton’s NEP are also in close proximity to other high-tech startups.¹⁵² This provides them with the opportunity to form alliances and share small business strategies. Dayton’s National Center for Industrial Competitiveness (NCIC) provides extensive business consulting, as well as venture capital.¹⁵³

Competitive access to information is an area where Winchester’s Technology Zone fails. While it provides a close proximity to a “fiber optic trunk line,” it is different from the other three programs in that it does not provide any kind of information service. In order to attract high-tech companies, it is simply not enough to offer tax-breaks and good infrastructure.

While price matters in the world of high technology, obsolescence matters more. High technology is a demand driven market: there is always a demand for the new generation of technology. These companies cannot simply outsell the competition. They must compete by beating the demand curve; they must constantly stay in front of the status quo, which in high-tech, is constantly changing. This begins to explain why the companies in the Biotechnology Research Park put so much value on proximity to the research facilities. It also explains why the Littleton’s NEP concentrated its resources on its public information service.

¹⁵⁰ *Supra* note 99.

¹⁵¹ *Supra* note 118.

¹⁵² *Id.* *Supra* note 108; Innvative, *supra* note 92, at 92.

¹⁵³ *Supra* notes 125-127.

While Dayton’s NCIC does not provide the kind of information that would directly assist high-tech companies stay on the cusp of technology, it still provides information that is essential to small businesses, such as business consulting and lending information.¹⁵⁴ The same can be said for Worcester’s MBRP and Littleton’s NEP, in that an important part of what they do is business consulting: the MBRP through monthly seminars, and the NEP as part of their service.¹⁵⁵

The incentive of competitive access to information fits Crabtree’s category of a demand-side incentive. This kind of incentive, as stated above, is a “government policy that add[s] value to a company’s production.”¹⁵⁶ The information might not make operating costs go down, but it does contribute something of value to the business. “Instead of providing cheaper labor, [it] improves the quality of the laborer.”¹⁵⁷ An information resource allows employees to educate themselves and be better-informed decision makers. The result is a more productive employee instead of a cheaper one. “Instead of the state providing a company cheaper real-estate, it provides a more valuable location.”¹⁵⁸ Close proximity to a source of information cuts down on the time it takes to receive that information. It also allows for somewhat accidental discoveries of information that one might not know exists, simply by matter of contact. In the fast paced high-tech world, the accessibility of fast, accurate, and comprehensive information could make a significant difference in the value of the location.

¹⁵⁴ *Id.*

¹⁵⁵ *Supra* notes 8, 111.

¹⁵⁶ Crabtree, *supra* note 78, and accompanying text.

¹⁵⁷ *Supra* note 79, and accompanying text.

¹⁵⁸ *Supra* note 80, and accompanying text.

Crabtree's discussion of demand-side incentives, therefore, is particularly relevant to the high-tech industry. The one common denominator between the successful programs was competitive access to information. This incentive fits squarely within Crabtree's definition of a demand-side incentive. The conclusion that one can draw from Winchester's Technology Zone program is that supply-side incentives simply are not enough. This is not to say that they are unattractive to businesses.¹⁵⁹ By design of the industry, high technology businesses need something of value other than cost savings.

III. A SURVEY OF ECONOMIC DEVELOPMENT INCENTIVES IN SOUTH CAROLINA

i. Supply Side Incentives: A Survey

The South Carolina Department of Commerce outlines most of South Carolina's economic development incentives in its January 2005 publication, *Business Incentives*.¹⁶⁰ For the purposes of this section, I concentrate on the incentives aimed at attracting business to move or stay in the state.¹⁶¹ Also, the statistical figures refer to the Corporate Income tax credits in the South Carolina Department of Revenue's (DOR) Annual Reports.

¹⁵⁹ It is worth noting that none of these programs included cutting their traditional incentive packages.

¹⁶⁰ SC Dept. of Comm., *Business Incentives*, Jan. 2005, [hereinafter *Business Incentives*] <http://www.callsouthcarolina.com/teamscpdfs/businessincentives.pdf>.

¹⁶¹ I do not discuss the Corporate Income Tax Moratorium Community because it includes a sunset provision, and will cease to be effective on July 1, 2005. (2000 S.C. Acts No. 277, § 3; S.C. Code Ann. (1976) § 12-6-3365) I also leave out the Development tax credit, which has a primary function of encouraging community development, and the Child Care tax credit, which elevates the costs of maintaining a childcare program. No business had claimed a Child Care tax credit in the 2000-2003 fiscal years, so this credit is somewhat inconsequential. (See, S.C. DOR, Ann. Rep. 2000-2001; S.C. DOR, Ann. Rep. 2001-2002; S.C. DOR, Ann. Rep. 2002-2003 [hereinafter *Annual Reports*, 2000-2003]). Arguably these may have an influence on a business' decision to startup, relocate, or remain in the state. However, for the sake of space, I will concentrate on the incentives that are traditionally considered influential.

a) Jobs Tax Credits:¹⁶²

This credit is aimed at encouraging business to create new jobs in South Carolina.¹⁶³ The legislature has broken the state down by county into “tiers” based on employment need.¹⁶⁴ The different tiers dictate the amount of tax credit a business will receive per job created, ranging from \$8,000 at the first tier, down to \$1,500 at the fifth tier.¹⁶⁵ The statute also specifies the industries that can qualify for the credit.¹⁶⁶ The credit is available for five of the company’s first six years, is awarded to new and expanding businesses, and is based on one-time job creation figures.¹⁶⁷ The state does control this incentive to a certain extent, in that if the “benefit” of the job disappears, the “cost” of the incentive goes with it.¹⁶⁸

b) Corporate Headquarters Tax Credit:¹⁶⁹

This is a 20% credit businesses can take against the value of their local operations or lease costs.¹⁷⁰ It is meant to alleviate the business’ relocation costs.¹⁷¹ In order to qualify the business must create at least 40 new jobs.¹⁷² Businesses that create 75 or

¹⁶² S.C. Code Ann. (1976) § 12-6-3360.

¹⁶³ Business Incentives, *supra* note 160, at 4.

¹⁶⁴ *Id.* at 5.

¹⁶⁵ *Id.* at 4.

¹⁶⁶ *Id.*

¹⁶⁷ *Id.*

¹⁶⁸ *Id.*

¹⁶⁹ S.C. Code Ann. (1976) § 12-6-3410.

¹⁷⁰ Business Incentives, *supra* note 160, at 6-7.

¹⁷¹ *Id.*

¹⁷² *Id.*

more new jobs are eligible for the enhanced corporate headquarters tax credit, which is set at 20% of the value of the tangible personal property costs of relocation.¹⁷³

A corporation can continue to receive the credit for up to 10 years from the year earned, and the state does not maintain the control the ability to rescind the credit once earned.¹⁷⁴

c) Economic Impact Zone Investment Tax Credit:¹⁷⁵

This credit allows manufactures locating in these areas “a one time credit against a company’s corporate income tax of up to 5 % of a company’s investment in new production.”¹⁷⁶ There is no minimum job creation figure and there is no means the state has to rescind this credit once issued.¹⁷⁷

d) Sales Tax Exemptions:¹⁷⁸

This code section provides sales tax exemptions for a liberal category of materials, equipment, and machinery used by business.¹⁷⁹ It includes an exemption for material-handing equipment for manufacturing or distribution projects investing more than \$35 million.¹⁸⁰ Further, there is a statewide, \$300 sales tax cap on “the sale or lease of aircraft, motor vehicles, motorcycles, boats, recreational vehicles, and other items.”¹⁸¹

¹⁷³ *Id.*

¹⁷⁴ *Id.*

¹⁷⁵ S.C. Code Ann. (1976) § 12-14-60.

¹⁷⁶ *Id.*

¹⁷⁷ *Id.*

¹⁷⁸ S.C. Code Ann. (1976) § 12-36-2120.

¹⁷⁹ Business Incentives, *supra* note 160, at 11.

¹⁸⁰ *Id.*

¹⁸¹ *Id.*

h) Property Tax Exemptions:¹⁸²

Section 3, art. X of the South Carolina Constitution provides that only the local government shall levy property taxes. The Property Tax Exemption code section exempts all inventories, intangible properties, and pollution control equipment from all local taxation.¹⁸³ (b)(32) of this code section entitles manufactures investing more than \$50,000 and distribution facilities, investing the same amount and creating 75 jobs, to a five year abatement period form county operating taxes.¹⁸⁴ This abatement will usually offset 20-50% of the total millage.¹⁸⁵ This abatement lasts for the first five years that it applies.¹⁸⁶ It does not come with any kind of modification: once it is given, the state, and in this case, the county cannot reduce or rescind it.

e) Fee-in-Lieu of Property Tax (FILOT):¹⁸⁷

A company that invests \$5 million in a county can negotiate with that county to lower their property assessment ratio and stabilize their millage rates for up to 20 years.¹⁸⁸ If the company 1) creates 200 new jobs and invests \$200 million, 2) has a preexisting investment of \$200 million and reinvests \$200 million more, 3) or simply

¹⁸² S.C. Code Ann. (1976) § 12-37-220.

¹⁸³ *Id.*

¹⁸⁴ *Id.*

¹⁸⁵ *Id.*

¹⁸⁶ *Id.*

¹⁸⁷ S.C. Code Ann. (1976) § 4-29-67.

¹⁸⁸ Business Incentives, *supra* note 159, at 14. (Chester, Fairfield, Marion, Marlboro, McCormick, and Williamsburg Counties require only a minimum of \$1 million. *Id.*).

invests \$600 million in South Carolina, counties can negotiate to increase this time period to 30 years.¹⁸⁹

f) Jobs Development Credit:¹⁹⁰

This incentive is essentially a fund that provides tax credits for eligible capital expenditures.¹⁹¹ Companies must use the money to offset their costs of locating or expanding their business in South Carolina.¹⁹² In order to be eligible, the company must receive a cost/benefit certification, showing that the project is of greater benefit than the cost to the State, from the South Carolina Coordinating Council for Economic Development.¹⁹³ They must also provide benefits packages that include health care for full-time employees and pay competitive wages.¹⁹⁴ The amount of credits is based on the number of jobs the company creates after the Coordinating Council issues its certification.¹⁹⁵ Further, companies receiving this credit are required to make relevant records available to the Coordinating Council and the DOR for inspection.¹⁹⁶

ii. Supply Side Incentives: Discussion

The FILOT was passed as a reaction to the loss of Fort Howard Paper to Georgia in 1988.¹⁹⁷ It is based on the law that the Georgia legislature passed during the Fort

¹⁸⁹ *Id.*

¹⁹⁰ S.C. Code Ann. (1976) §§ 12-10-80—81.

¹⁹¹ Business Incentives, *supra* note 160, at 14-15.

¹⁹² *Id.*

¹⁹³ *Id.*

¹⁹⁴ *Id.*

¹⁹⁵ *Id.*

¹⁹⁶ *Id.*

¹⁹⁷ Crabtree *supra* notes 58-61 and accompanying text.

Howard Paper negotiations.¹⁹⁸ Policy makers were convinced that if Jasper County in South Carolina had been able to negotiate a more attractive incentive package in the way of property taxes, Fort Howard Paper would not have gone to Georgia.¹⁹⁹

The Job Development credit, the Economic Impact Zone credit, and the Corporate Headquarters credit were all passed seven years latter. They were all passed as part of the Economic Impact Zone Community Development Act of 1995,²⁰⁰ “designed to offset the impact of federal downsizing in the state, in areas surrounding the Charleston Naval Base, Myrtle Beach Air Force Base, and Savannah River Site.”²⁰¹

The timing of these incentives lends them to the critique that they were motivated by politics as opposed to well thought policies. The loss of Fort Mill Paper and the Department of Defense cutbacks in South Carolina were large-scale losses that politicians could not ignore. A quick passage of traditional incentives will show constituents that their politicians had an aggressive reaction to these dramatic circumstances. The long term effect, however, is that South Carolina further placed the state in a weak bargaining position with business, and exposed the economic development of the state to long-term determent.

For example, the Corporate Headquarters credit, property tax exemptions, and the FILOT program all issue the credit after the requirements are met one time.²⁰² A given company could engage in massive layoffs several years after qualifying for the incentive;

¹⁹⁸ *Id.*

¹⁹⁹ *Id.*

²⁰⁰ 1995 S.C. Act No. 25 §§ 1-2.

²⁰¹ SPI South, *South Carolina Business Incentives and Resources*, at <http://www.spisouth.org/involvement/southcarolina.htm> (last visited Apr. 12, 2005).

²⁰² *Supra* notes 169, 182, and 187.

the state would then be stuck with the cost of the incentive, without the benefit it is intended to confer.

The Jobs Tax Credit and the Economic Impact Zone credit are “modified,” in that the state can cut back the credit if the company cuts back the intended benefit (jobs or new capital equipment).²⁰³ This is, however, a weak modification that does not change the role of the state as being subservient to the business. Because the state is powerless to completely rescind the credit, it cannot force the business to deliver the benefit as promised by the business.²⁰⁴

The “modified” nature of the Jobs Tax Credit and the Economic Impact Zone is an indication of forward-looking planning. However, the Corporate Headquarters credit, passed in the same act, does not contain a modifier. Indeed, as stated above, once the business qualifies for this credit, it no longer has to account for the money. (*Supra* note 194 and accompanying text). The passing of modified and unmodified incentives in the same act indicates a lack of consistency within the legislature’s economic development policy.

The FILOT and the sales tax exemptions pose a particular risk, in that they render the state and the individual counties susceptible to competition through incentives. Once the county establishes that it is trying to attract a certain business, the political pressure is on to “win” the fight. Theoretically, the county will have done its cost-benefit analysis and will have a cut-off point in its negotiations. However, in practice, those who make

²⁰³ *Supra* notes 190, 227 and accompanying text.

²⁰⁴ The “modified” nature of the Jobs Tax Credit and the Economic Impact Zone is an indication, however slight, of forward-looking planning. However, the Corporate Headquarters credit, passed in the same act, does not contain a modifier. Indeed, as stated above, once the business qualifies for this credit, it no longer has to account for the money. (*Supra* note 174 and accompanying text). The passing of modified and unmodified incentives in the same act indicates a lack of consistency within the legislature’s economic development policy.

this decision will be under an enormous public pressure reduce the tax liability beyond rational levels in order to bring those jobs to their county.

Another example of the weak planning is the affect of the Economic Impact Zone tax credit.²⁰⁵ Twenty-six out of forty-six counties are designated “economic impact zones,”²⁰⁶ where special tax credits apply. When 55% of the state is designated, there is no motivation for businesses to go to the specific counties that need job creation the most. Also undermining the motivational element of this incentive is the fact that the credit only applies to 5% of the business’s cost of new production equipment.

Because this tax credit covers roughly 55% of the state, the result is expensive. From the fiscal years 2000-2003, these credits account for 29% of the total corporate tax credits, and are the second most expensive corporate tax credits from the perspective of the state.²⁰⁷

The political motivate is clear: tell fifty-five percent of the counties that they are now part of a job development program, and tell the rest of the counties that the program will not affect them because the incentive is so weak. Politically, everybody wins. The result, however, is clearly not cost beneficial to the state. It is an almost blanket tax cut which does very little to serve its purpose, while costing the state an enormous amount of money in terms of forgone revenue.

One incentive that shows promise is the Jobs Development tax credit.²⁰⁸ The fact that the state pre-evaluates the incentive on a cost-benefit level, and the rescission

²⁰⁵ *Supra* note 175.

²⁰⁶ *See*, Business Incentives, *supra* note 160, at 8.

²⁰⁷ *See*, Annual Reports, 2000-2003, *supra* note 161.

²⁰⁸ *Supra*, note 190.

modifier that allows the state to retain control, suggests that this incentive does not suffer from the critique that it is not cost effective.

iii. Demand Side Incentives

There exist several demand-side economic development programs in South Carolina. The South Carolina Department of Commerce mentions two of these incentives in its *Business Incentives* manual: Funds for Retraining Available for Existing Industry and South Carolina's Center for Accelerated Technology Training. This manual is not a comprehensive review of the demand-side incentives that currently exist. There is also legislatively enacted venture capital fund,²⁰⁹ and the University of South Carolina has an incubation program.²¹⁰ We also have the South Carolina Technology Alliance (SCTA), which is a private/public partnership created as part of the South Carolina Technology Initiative.²¹¹ In theory, the SCTA was created to develop and create a comprehensive plan to develop the local technology business environment.²¹² In practice, the SCTA also serves as a consultant, liaison, and mentor to new and emerging technology companies.²¹³

a) Funds for Retraining Available for Existing Industry (FRAEI):²¹⁴

²⁰⁹ S.C. Code Ann. (1976) §§ 11-45-10, et seq.

²¹⁰ USC Technology Incubator, *The Incubation Program*, at <http://www.incubator.research.sc.edu/program.shtml> (last visited Apr. 12, 2005).

²¹¹ Governor's Executive Order 99-33.

²¹² South Carolina Tech. Alliance, *Highlights and Accomplishments, 2003*, at http://www.sctech.org/custimage/highlight_report.pdf.

²¹³ *Id.*

²¹⁴ S.C. Code Ann. (1976) § 12-10-95.

Eligible business can get up to \$500 per production employee, payable to a technical college where they will “retrain” in order to stay abreast of competition or to facilitate the introduction of new technology.²¹⁵ The business must match the funds paid by the state, and will not be eligible to receive both these funds and job development credits.²¹⁶

b) The Center for Accelerated Technology Training (CATT):²¹⁷

The CATT is a program operated by the State Board for Technical and Comprehensive Education to train and educate employees for businesses who are expanding or relocating into the state.²¹⁸ When a business solicits CATT’s services, “CATT staff members meet with the company and analyze the jobs and skill levels needed.”²¹⁹ CATT then recruits and trains workers to meet the company’s specific needs.²²⁰ The courses are tailored to meet the company’s standards and there is no obligation for the company to hire the trainees.²²¹ CATT also provides on-the-job training.²²² There is no limit to the number of employees a company may send to the CATT program.²²³ This is all done at no cost to the employer.²²⁴

²¹⁵ *Id.* at 16.

²¹⁶ *Id.*

²¹⁷ Business Incentives, *supra* note 160, at 17-18.

²¹⁸ *Id.*

²¹⁹ *Id.*

²²⁰ *Id.*

²²¹ *Id.*

²²² *Id.*

²²³ *Id.*

²²⁴ *Id.*

From the website:

The Center for Accelerated Technology Training is currently involved with 103 companies developing and/or implementing specific training programs. Fifty-two percent are new companies, and 48 percent are existing companies who are expanding. In the last year, more than 5,000 people went through training at the Center for Accelerated Technology Training. And since 1961, CATT has trained nearly a quarter of a million people (228,269) for new jobs with 1,781 companies.²²⁵

c) The Columbia USC Technology Incubator (the Incubator):

The University of South Carolina (USC) incubator provides starting businesses with office space, labs, service provider networks, software networking, business and technical consulting, and administrative assistance.²²⁶ It also provides these businesses close proximity to the research facilities at USC and Midlands Technical College (MTC).²²⁷ The program is primarily for USC students and faculty, but is also available to MTC students, faculty, and staff, as well as companies and non-USC individuals starting or moving to the state who wish to have interaction with the USC or MTC.²²⁸ The USC Research Foundation manages the program.²²⁹ All participating companies must be technology driven, and only they are allowed a certain time before they must graduate from the program.²³⁰ The time periods range from eighteen months for private

²²⁵ SC Technical College System, Center for Accelerated Technology Training, at <http://www.sctechd.tec.sc.us/catt.htm> (last visited Feb. 27, 2005).

²²⁶ USC Columbia Tech. Incubator, *Welcome to USC Columbia Technology Incubator*, <http://www.incubator.research.sc.edu> (last visited Feb. 27, 2005).

²²⁷ USC Columbia Tech. Incubator, *The Incubation Program*, [hereinafter *The Incubation Program*] at <http://www.incubator.research.sc.edu/program.shtml>. (last visited Feb. 27, 2005).

²²⁸ *Id.*

²²⁹ Vice President, Res. and Health Sciences, *Welcome USC Research Foundation*, at <http://www.sc.edu/research/uscrf.shtml> (last visited Feb. 27, 2005).

²³⁰ *The Incubation Program*, *supra* note 227.

companies, to three years for individuals and USC/MTI faculty, staff, and professors.²³¹ Individuals, USC, and MTI companies must provide a business plan, and pre-existing companies must provide company information.²³² Pre-existing companies are not required to pay rent.²³³ The USC Research Foundation will receive equity in the individual, USC, and MTI sponsored companies.²³⁴

From its inception in November 1997 to February 8, 2005, the program has graduated twelve graduate companies, and currently includes nine student companies and thirteen non-student companies.²³⁵ It is responsible for creating 345 jobs and raising \$27 million.²³⁶ The companies' salaries average \$43,678.²³⁷

The South Carolina Technology Alliance (SCTA) put this job creation in an interesting perspective in its document, *Highlights and Accomplishments*.²³⁸ The SCTA compares the would-be cost of the supply-side incentives to the benefit that the demand side incentive (the incubator) brings:

Using the per job creation formulas that have been awarded by the South Carolina Department of Commerce, the companies that have been home grown in the incubator would have gotten over \$75,000 per job had they been recruited from outside our state based on previous economic development incentives. [Read: supply-side incentives] Therefore using this amount for our example, had our state used this type of incentive to

²³¹ *Id.*

²³² *Id.*

²³³ *Id.*

²³⁴ *Id.*

²³⁵ *Id.*

²³⁶ *Id.*

²³⁷ SC Tech. Alliance, *Highlights and Accomplishments*, pg 13, http://www.sctech.org/custimage/highlight_report.pdf (last visited Feb. 27, 2005).

²³⁸ SCTA is a private/public partnership whose mission is to “create a comprehensive plan addressing policy, legislation and funding initiatives which will lead South Carolina into the 21st century.” *Id.* at 22.

recruit these high tech businesses to South Carolina, it would have cost the state over \$18,300,000. Using our incubators to grow our own high tech companies, the cost to the state would be almost zero. Most of the financial support for the incubator in Columbia comes from local business, city, and county resources. This is a powerful statement and makes the theory of “growing our own”, [sic] 18.3 million times stronger.²³⁹

d) South Carolina Venture Capital Investment Act (the Fund):²⁴⁰

This Venture Capital Fund Act took effect in March, 2004.²⁴¹ Based on an Oklahoma public program, the fund will solicit money from banks and insurance companies.²⁴² They will pool their money into a fund that is managed by a board of seven experienced, private sector money managers, whom the legislature and the governor will appoint.²⁴³ The fund will pay back the contributors just like a normal venture capital fund.²⁴⁴ Should the venture capital fund lose money, the state will reimburse the contributors through tax credits.²⁴⁵ Joe Collier from The State anticipates the fund will attract as much as \$100 million in venture capital.²⁴⁶

²³⁹ *Id.* at 14.

²⁴⁰ S.C. Code Ann. (1976) § 11-45-10—100. (Added by 2004 S.C. Act No. 187, § 5, *eff.* March 17, 2004.).

²⁴¹ *Id.*

²⁴² Joe Guy Collier, *South Carolina Seeks Boost for Venture Capital*, *The State*, Feb. 20, 2003, <http://www.matr.net/article-5897.html>.

²⁴³ *Id.*

²⁴⁴ *Id.*

²⁴⁵ *Id.*

²⁴⁶ *Id.*

The same code section includes the South Carolina Technology Innovation Fund, created “to award small grants to award small grants for the best and most creative ideas from South Carolina research universities' technology incubators.”²⁴⁷

While there is currently too little information to gage the effectiveness of the Fund, the success of the Oklahoma model gives reason to be optimistic.²⁴⁸ “In the first decade of the program, more than \$84 million has been invested without using any of the \$100 million in tax credits authorized by the state.”²⁴⁹

iv. Discussion

With the small exception of the incubator’s rent breaks, these incentives do not provide the company with cheaper land, capital, or labor.²⁵⁰ In fact, the business must actually pay to take part in the Funds for Retraining Available Existing Industry (FRAEI).²⁵¹ The focus of these incentives is on bringing value to the company through human capital. The FRAEI accomplishes this by retraining the state’s workforce to accommodate new markets;²⁵² the Center for Accelerated Technology Training accomplishes this by training the state workforce to accommodate expanding markets.²⁵³

While the incubator does provide free rent to pre-existing companies, and cheap rent to startup companies, its main attraction is its location. It is four blocks from the main campus of the University of South Carolina, and within a short drive to three of the

²⁴⁷ S.C. Code Ann. (1976) § 11-45-80.

²⁴⁸ Collier, *supra* note 242.

²⁴⁹ *Id.*

²⁵⁰ *Supra* notes 214-49 and accompanying text.

²⁵¹ *Supra* note 214.

²⁵² *Id.*

²⁵³ Business Incentives, *supra* note 160, at 17-18.

five Midlands Technical College campuses. This puts the tenants in close contact with all of the research that goes on at these schools. They also provide business and technical consulting.

The Fund defies the supply and demand-side incentive categories. It does fit the definition of a supply-side incentive in that it provides businesses with capital in the way of startup money. However, this money does not necessarily come cheaper than it would through a normal venture capital fund. Another important distinction between the Fund and the traditional supply-side incentive is the way the Fund is structured. The Fund receives money from private institutions and is managed by a board that is represented by the public sector. The only role that the state has is to create a risk-averse environment for the investors. The state will never be involved with the Fund if the program achieves status quo, so the program is theoretically costless for the state to operate. The structure and purpose of the Fund further insulates it from the political pressures that render supply-side incentives ineffective. The business does not assume the dominant role over the state. Further the state is not in a position to compete for a politically popular company. The money will be invested pursuant to a rational, cost-benefit analysis that takes into account the long-term benefits, because investments will be made as though it were a normal venture capital fund. Therefore, the Fund seems to be an economic incentive that does not fit squarely within one of Crabtree's categories.

V. ANALYSIS AND APPLICATION

In cultivating the local market for the fuel cell economy, we must pay special attention to the lessons learned in the four case studies. I would conclude that the urgency rests in concentrating more on developing our demand-side incentives, rather

than shedding our existing supply-side incentives. It is important to note that there is no indication that the high-technology companies are turned off by these incentives. There was also no indication that any of the cities or states which saw success withdrew economic incentives in order to attract high-tech companies.

Indeed, such an act might prove politically impossible. Politicians sold the public on these huge tax incentives, and they proved themselves by bringing in “big-fish” like BMW and Michelin. It is unlikely that politicians will turn around and withdraw these incentives. It is far easier for the voting public to make the connection supply-side incentives and short term benefit, than to make the connection between the same incentives and their long term deterrent.

It is also important to keep the cost of these incentives in perspective. Last year, the corporate income tax credits cost the state \$59,181,720.²⁵⁴ While this number is high, it constitutes just over 1% of the General Fund Collections. In the final analysis, the tax credits are not a crippling expense.²⁵⁵

It is not even clear that the demand-side incentive of state provided educational programs is effective in attracting new business. The NEP in Littleton, Colorado completely abandoned its education and training programs to focus on its information services. South Carolina has had its CATT program since the 1960’s, and while the program itself seems to work, it has not given us a competitive advantage in attracting high-tech business. This is perhaps due to the fact that so many states have adopted such

²⁵⁴ Annual Report, 2003-2004, *supra* note 161.

²⁵⁵ If there is any incentive that should be reconsidered, it is the sales tax exemptions. Last year, the state exempted over 47% of the total gross sales. Given Sales and Use tax constitutes 42% of our budget, a total phase out of sales tax exemptions would almost double the state’s revenue. Of course, the sales tax figures do not represent corporate activity alone. The DOR does not report the figures in this way, and therefore it is difficult to analyze the cost of corporate sales tax exemptions.

a program, that it is just not a competitive advantage. For this same reason, though, it is not be advisable to abandon the educational programs. While these programs might not be real incentives, taking them away might be a disincentive.

The most important lesson learned from the GTI study, was that easy and free access to information resources are what really matters to high-tech industry. We also learned that the term “information resources” should be considered in a broad sense. This term could include a specific information program, as in Littleton, Colorado; it could include information from other similar companies or information from academic research centers, as in the Worcester research park; it could also include business consulting information, as in the Dayton NCIC capital fund.

The Incubator offers technical and business consulting, as well as easy access to academic research and other similar businesses. In this way, it is like Worcester’s MBRP. Our new venture capital fund would do well to learn from the success of Dayton’s NCIC, and serve the role as business consultant instead of just accepting or rejecting applications. We would also do well to copy the success of the Littleton NEP, and begin local information resource services which would be available to businesses as a matter of public service.

V. CONCLUSION

In order to encourage the fuel-cell economy to move to South Carolina, we must realize that in the high-tech world, information is currency. Lower production costs are wholly uninteresting if you are producing obsolete technology. The obvious conclusion is that we should promote the fuel cell research program. Given its status as the only

I/UCRC program in the country, it is the best resource of information that private industry can find concerning fuel cells.

The not-so-obvious conclusion is the kinds of incentives that we will have to employ to take advantage of this information resource. We will simply not be able to entice high-tech companies with competitive tax credits and cheap rent. We must offer them space close to the actual research. We must establish an efficient information exchange program between the university system and the new companies. We must also create a venue for them to communicate amongst themselves. The value and efficiency of the Fund would be greatly increased if it came along with business consulting services. These services would be even more valuable if they concentrated on high-technology startups that targeted fuel cell companies. We must be creative in the different ways we provide information to our local businesses in recognition of the fact that we are competing with the outside world. Once other states develop programs that are similar to ours, it is time to reevaluate those programs and develop something different that gives us a fresh competitive advantage.