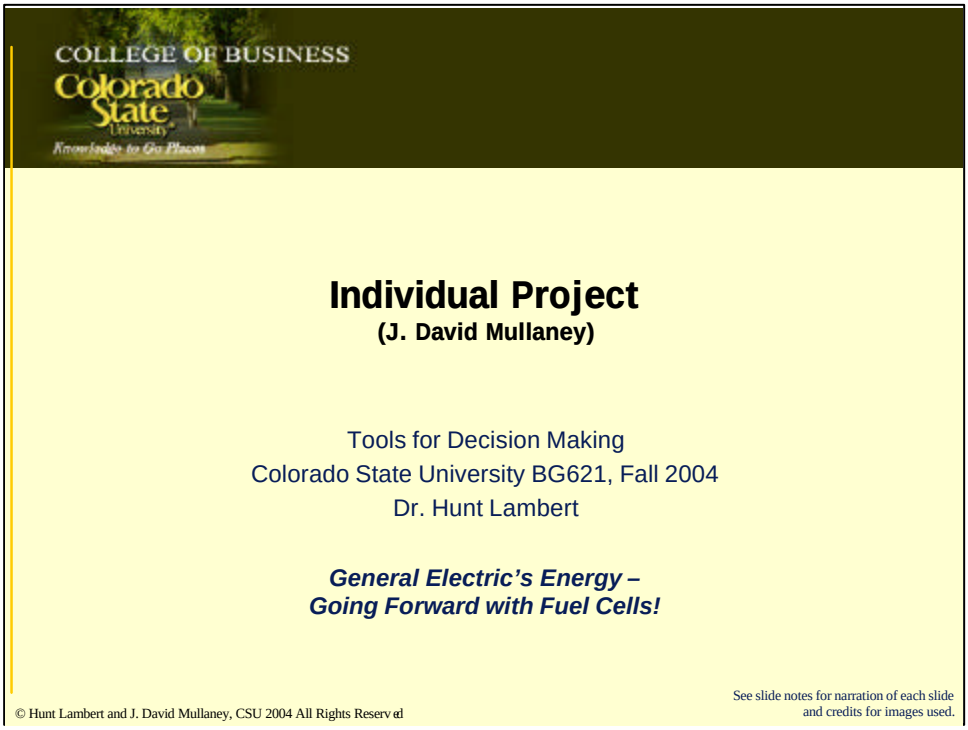


Good evening.

¶

Tonight you will see the unique and exciting role that GE can play in making fuel cells a viable alternative to the traditional power grid.

"GE brings good things to life" was a slogan that I embraced growing up; even today, I find more reasons to respect this tri-century company. Focusing on one of the key growth areas related to GE Energy (with a presence in Northern Colorado) gives me the opportunity to learn more about a company worthy of extending me a job offer!

¶

GE Energy is one of the eleven business units. Others are listed on the slide, and the interrelationship of GE businesses will be an important part of this presentation.

¶

All of them together are bringing nearly 30 years of ever-increasing dividends to the stockholders. Double-digit increase for earnings growth (year over year) continues to be a primary goal for General Electric.

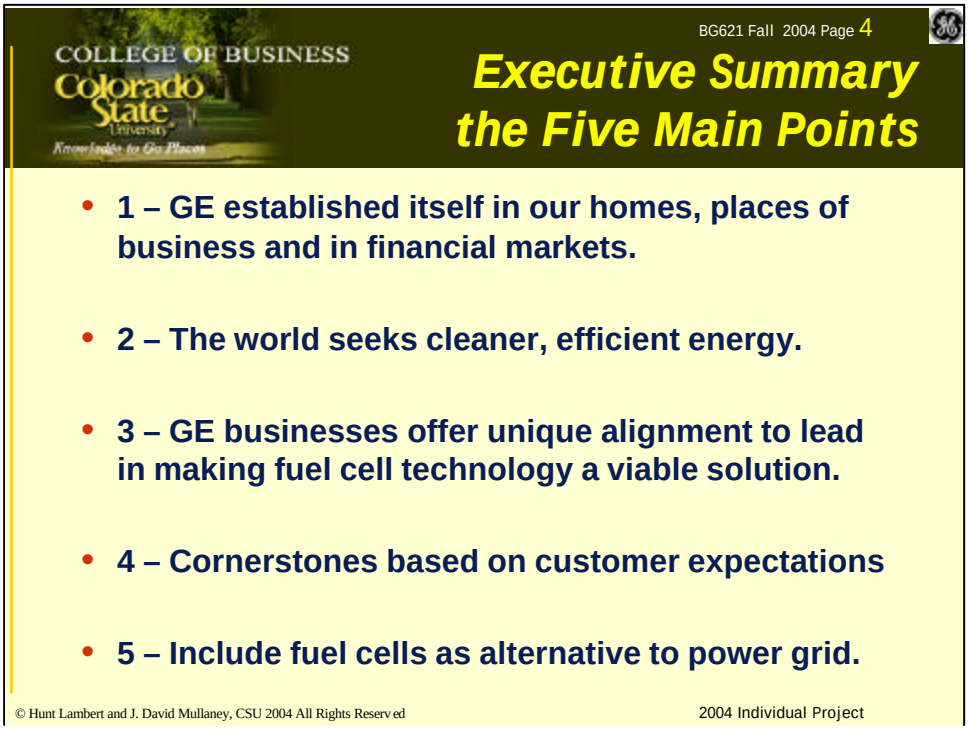
GE has outlasted all other companies listed in the original Dow Jones Industrial Index of 1896; the brand is worth more than $44 million. The balance sheet shows over $55 billion of intangible assets; GE operates in over 100 countries with about 315,000 employees.

¶

How often do you turn on a light? The world is reminded of Thomas Edison's legacy every time we walk into a room and flip the light switch.

¶

GE is definitely one of the industrial leaders of the modern world and retains the competitive advantage developed over many successful decades.



Throughout this report, you will see that GE is well-established in many areas. The product under investigation is an answer to the world's cry for clean, efficient, reliable energy. The business units of GE complement each other in a way that makes GE uniquely qualified to provide the leadership needed to launch fuel cell technology as an alternative to the traditional power grid electrical supply system; in every aspect of the program, customer expectations must be understood, quantified, addressed and surpassed.

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Specific Problem Addressed

- **Problem statement**
  - Many obstacles require intelligent solutions to support the successful commercialization of fuel cells as a reliable, cleaner, more efficient and cost-effective means of energy generation. GE Energy must determine its leadership role related to:
    - Architecture and deployment of a parallel energy grid solution
    - Regulations
    - Timing
    - Pricing
    - Competition

- **Significance of the problem**
  - Most companies lack means to launch energy technology
  - Fossil fuels are in limited supply; pollution hurts everyone

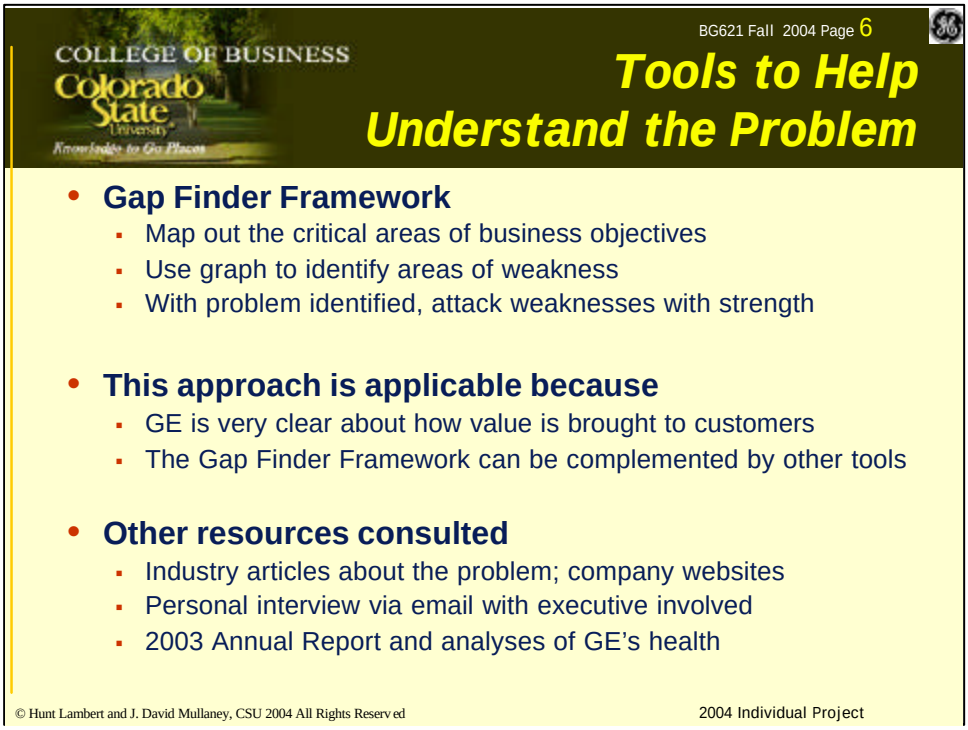
2004 Individual Project

The problem statement poses a significant challenge for any company; GE is facing many obstacles requiring intelligent solutions to support the successful commercialization of fuel cells as a reliable, cleaner, more efficient and cost-effective means of energy generation.
GE Energy must determine its leadership role related to:

* Architecture and deployment of a parallel energy grid solution
* Regulations
* Timing
* Pricing
* Competition

¶

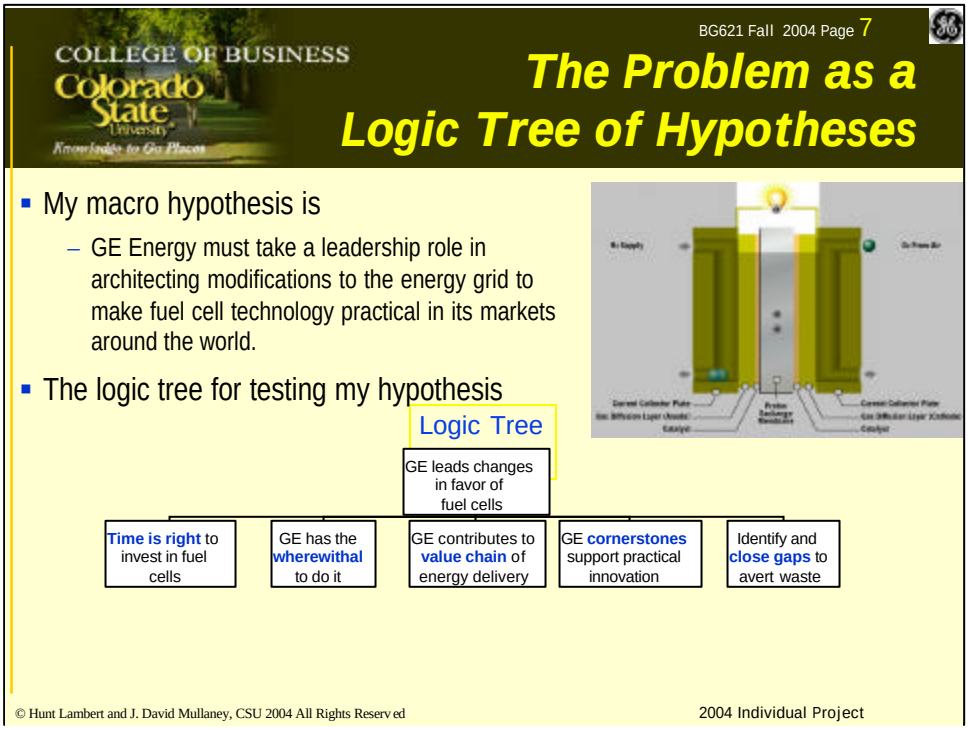
The figure on the slide illustrates major components of the fuel cell solution as seen at the customer site. Natural gas (or propane, hydrogen, etc…) enter the fuel reformer, leading to the fuel cell stack module (provided by Power Plug –who also provided the figure), through an electrical grid connection and power conditioning unit to produce AC power needed for all your household needs.



The Gap Finder Framework is a tool that has been developed by Hunt Lambert. As you see it applied to this problem, the relationship among business objectives and measurable reality are evident. The graphical format allows a manager to visualize how gaps and waste can prevent targets and realities from meeting each other. The approach is built upon the central importance of the customer.

¶

Other tools that lend themselves toward analysis of sub-hypotheses include the product life-cycle curve, the activity map and value chain (with adjacent industries as well).



The logic tree is shown here. We will review the hypothesis along with each sub-hypothesis in just a moment.

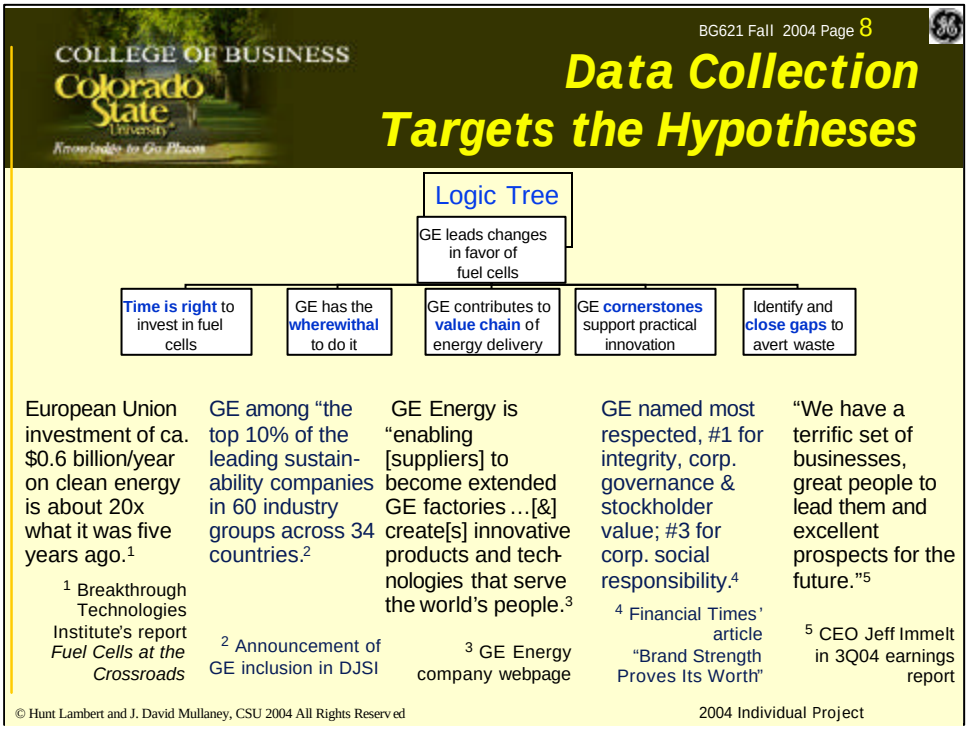
¶

The graph is part of a Plug Power demo* to show how hydrogen particles come into a fuel cell, separate into electrons and protons at the MEA anode catalyst; the electrons produce electricity; protons combine with oxygen and then again with the electrons to produce water and heat. This is an electrochemical process rather than a traditional combustion process.

¶

My hypothesis is that GE Energy must take a leadership role in architecting modifications to the energy grid to make fuel cell technology practical in its markets around the world. Now let's look into that a bit more closely on the next slide.

*PlugPower figures in this presentation were downloaded from http://www.plugpower.com/ .



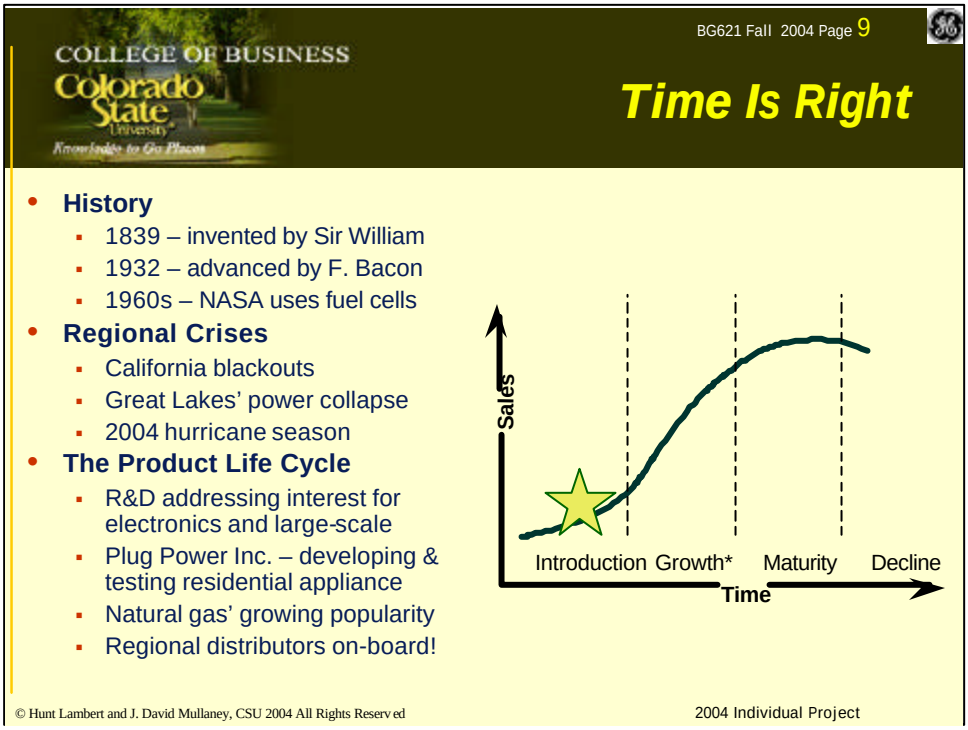
You can abbreviate that hypothesis by saying that GE leads changes in favor of fuel cells. The sub hypotheses must back this up for it to hold true.

¶

1) The time is right to invest in fuel cells. The European Union and Japan are way ahead of the United States in this area. Their markets are desperate for alternative energy sources.
2) GE has the wherewithal to do it. GE's inclusion on the Dow Jones Sustainability Index is one more recent validation that GE is a company to watch.
3) GE contributes to the value chain of energy delivery. As in the other business units, GE Energy partners with other industry players and with their customers to improve life and commerce.
4) The GE cornerstones shown for the Gap Finder Framework support the practical innovation required to make fuel cells successful in the target markets.
5) GE must identify and close gaps to avert waste. As mentioned earlier, the cornerstones should support results that live up to expectations; however, in this world, we are always toiling to achieve success and to minimize wasted effort.

¶

These are the areas we will explore to test the hypothesis.



The history of fuel cells goes back farther than you might expect.

In 1839 – original fuel cells were invented by Sir William Robert Grove.

(Of course, in 1895 – Thomas Edison merged companies to create General Electric – unrelated to Sir William's work earlier that century.)

In 1932 – fuel cell technology was advanced by Francis Bacon.

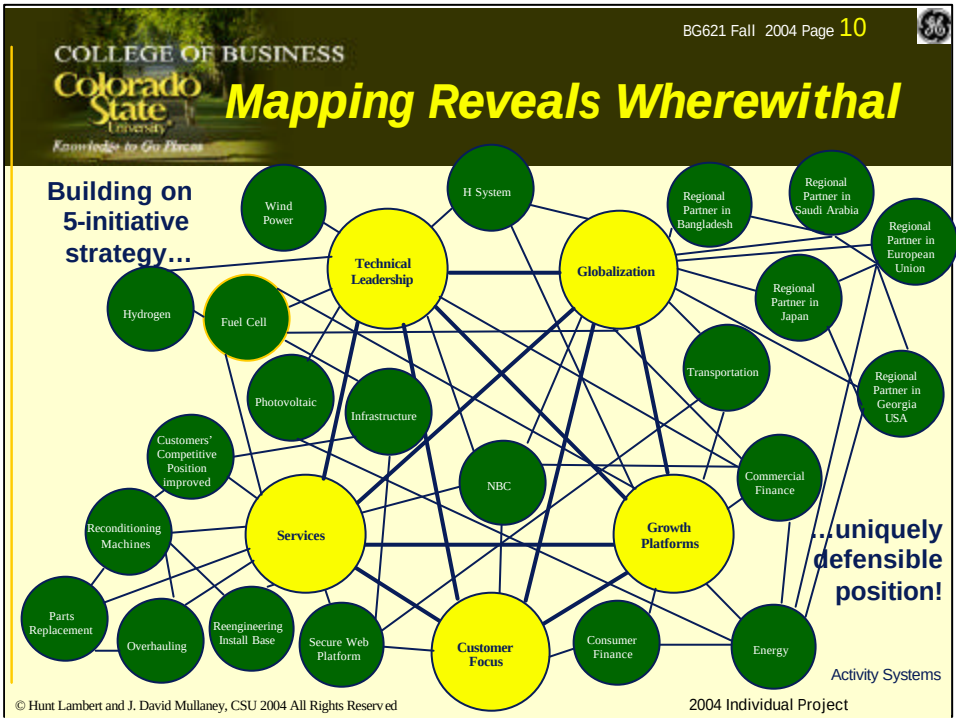
In the 1960s – NASA's space program depended on fuel cells to power spacecraft.

¶

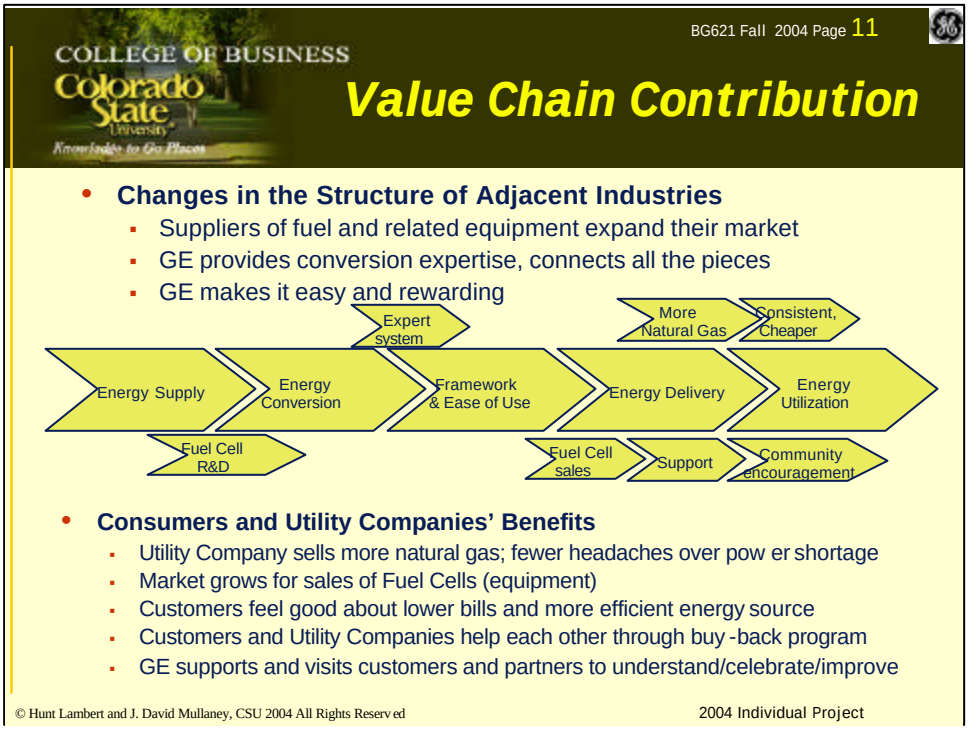
Just within the United States, several news items remind us of the need for alternative energy sources. California cannot meet its residents' demand for electricity. The whole Great Lakes region went dark when the power grid failed across several states. Hurricanes battered the southeast several times in a row in 2004, leaving a need to restore electricity and electrical systems to millions of customers.

¶

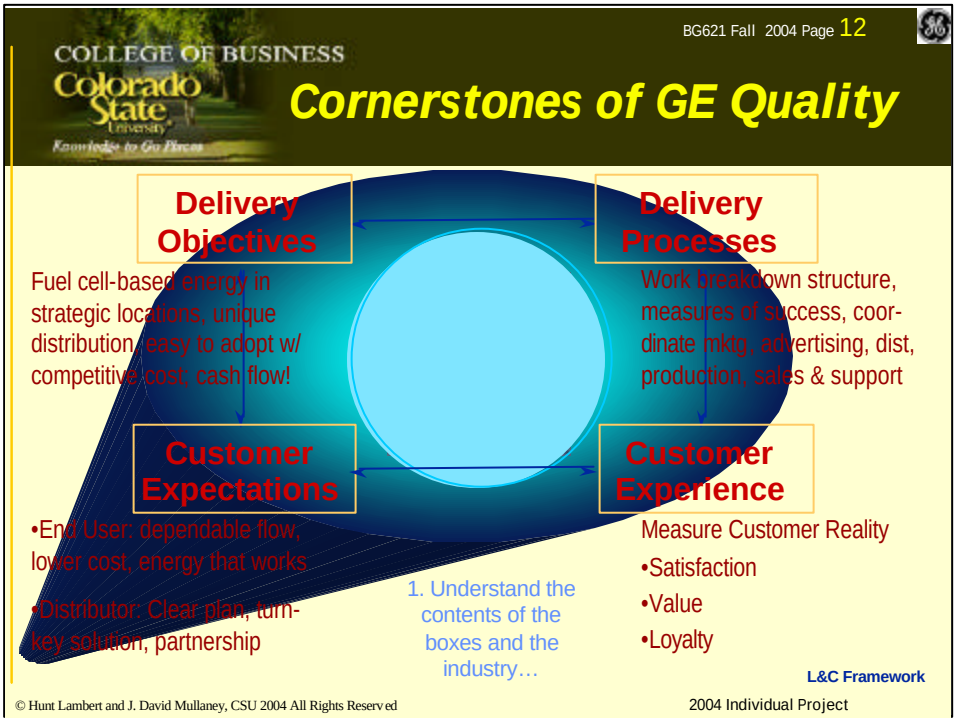
Now is the time to move forward with fuel cell technology. Plug Power is meeting the need with a technical solution. GE has arranged with distributors around the world to make this a reality for their customers. The market is really close to launch and can expect many years of growth.



GE has identified its 5-initiative strategy to center on Technical Leadership, Services, Customer Focus, Growth Platforms and Globalization (though not necessarily in that order). When you consider the businesses and business strengths that contribute to each strategy area, the wherewithal of GE to succeed is compelling. Also, consider how each of the supporting areas complement one another. Note that NBC is a huge resource for communication/marketing/advertising (beyond internal GE Energy communication initiatives).



GE is working with its supplier of the fuel cell technology to make sure that the product will meet GE's rigorous standards. GE has also arranged for utility companies to deploy the new technology to their respective customers. GE has an opportunity to tie all this together and to contribute from various angles as people begin and continue to benefit from the new product.



Here we start to see the much-awaited Gap Finding Framework. The framework is broken up in this presentation to emphasize an initial understanding of the contents of each cornerstone and the industry.

¶

Starting with Customer Expectations, note that the end user is seeking a dependable flow of electricity; they want it at a lower cost, and they want it to work with their electronics and appliances at home. Distributors are another kind of customer; they require a clear plan from GE. Turn-key solutions will be easy to sell and maintain; this is really about partnership.

¶

GE has expectations as well: Delivery Objectives. As shown in the activity map, GE Energy plans to start the fuel cell distribution with one distributor (each) in the following regions: Japan, Bangladesh, Saudi Arabia, European Union and the United States. No other competitor seems to be addressing this issue on a similar scale. Distributors and end-users should find the process easy to adopt, and the cost is targeted to be competitive with traditional sources of energy. Of course, GE and its partners must enjoy significant cash flow to make the work worthwhile. This includes the 5 Ps: Product (fuel cell-based energy), Place (5 regions listed), Position (unique; introduction of exciting alternative to existing power), Packaging (easy to adopt) and Price (competitive with standard utility).

¶

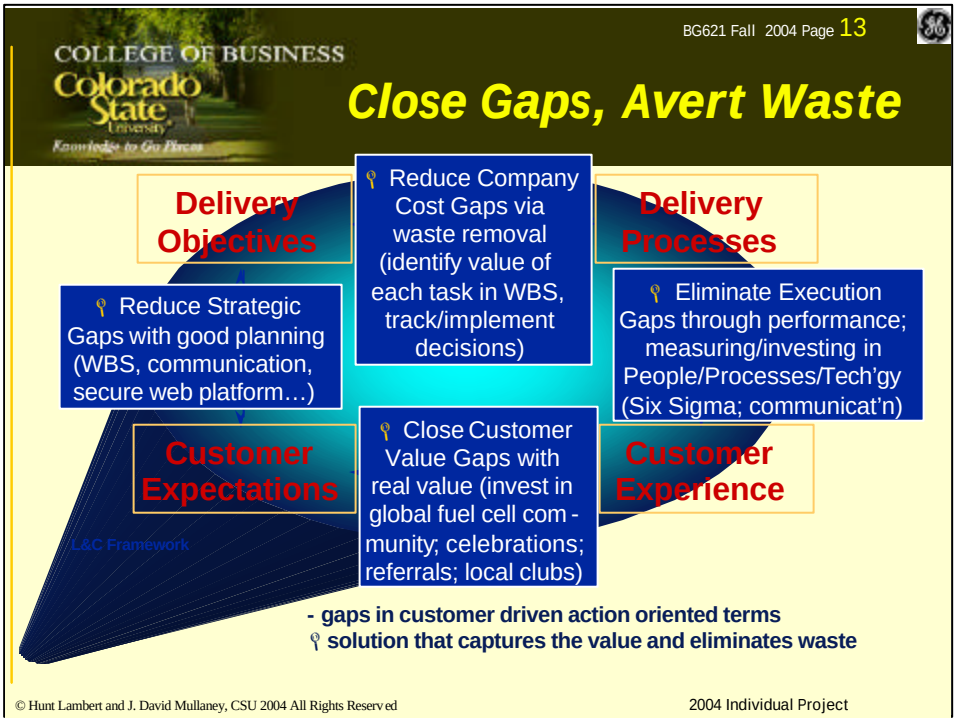
The third cornerstone contains the delivery processes. Key areas include planning through use of a Work Breakdown Structure, determining measures of success and ensuring that the right skills and systems are in place. Some potential strategies in key areas of this business unit include Marketing (put brand/reputation into the product), Advertising (get select regions excited about this), Distribution (define measurable objectives with distributors), Production (enforce high standards of quality assurance with supplier), Sales (a shared compensation plan between distributors and to a lesser extent GE), Support (bring this back in-house).

¶

The rubber meets the road with the customer experience. GE must measure the customer's reality. If GE runs the customer support program, then data related to customer satisfaction will be readily available; this can help determine which advertising strategies to take. Perceived value will again be available through the support channel; additionally customer interest in upgrades will indicate measurable levels of perceived value. Loyalty is an area that Fredrerick Reichheld has emphasized as measurable and real; customer usage and referrals related to the product will indicate levels of customer loyalty achieved.

¶

GE is opening the market and providing accountability and standards for its partners; these cornerstones provide critical data to roll into the (updated) business plan for the fuel cell product.



Ideally, these cornerstones would connect cleanly through the implementation and experience of everybody involved; however, GE must audit the reality and search for gaps (defined in customer-driven, action-oriented terms). Furthermore, GE must architect and implement solutions that capture the value proposed and eliminate waste that tends to pollute each step of the business cycle.

¶

Strategic gaps occur when the delivery objectives do not support meeting customer expectations. Good planning, a methodical approach to the Work Breakdown Structure (WBS), and clear communication amongst all parties reduce this risk. GE already has developed a secure web platform "for seamless communication and workflow processes" with customers and suppliers. *Way to go, GE!*

¶

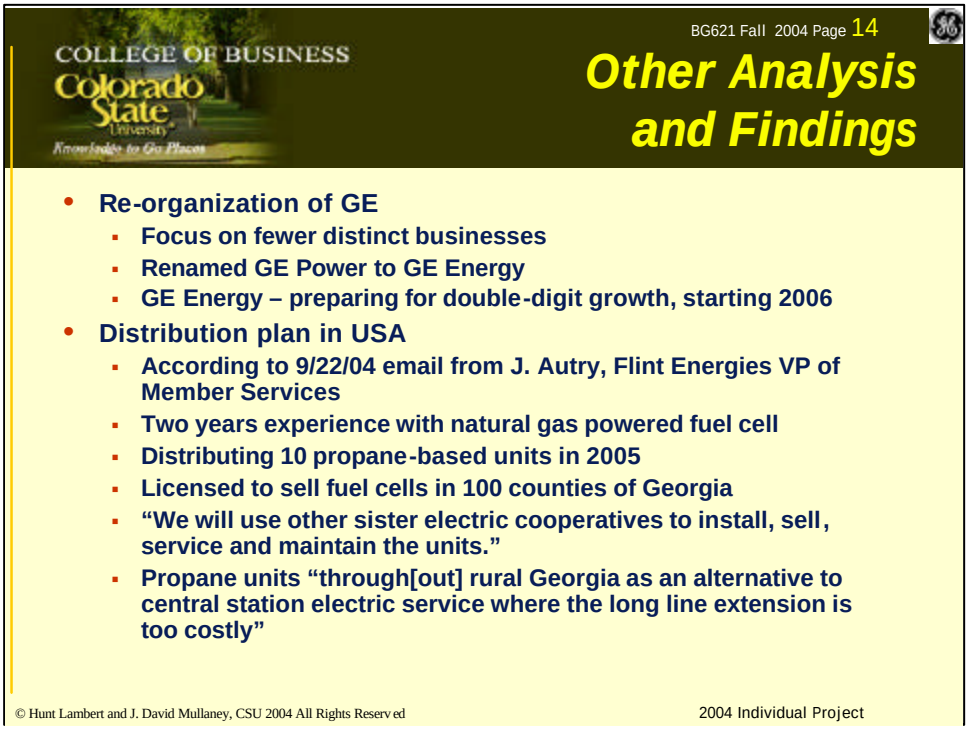
Company cost gaps encroach against successful delivery. If the delivery processes do not adequately address the delivery objectives, then waste creeps in. As part of the WBS formation, GE should identify the business value of each task; then decisions should be implemented and tracked in terms of the level to which each business value was achieved through its corresponding task.

¶

Execution gaps pollute the process when customers experience a less-than-stellar product or service. GE should measure the effectiveness of people, processes and technology through the eyes of each benefactor (internal or external to GE, partnerships or customer relationships); naturally, the people, processes and technology should receive appropriate investment to be fruitful. GE was a principal popularizer and continues to be an excellent example of a Six Sigma company; those practices will help to eliminate execution gaps for this product line.

¶

Finally, it all comes down to how well the customer experience maps to customer expectations; the customer must recognize the value they are enjoying. GE should invest in the creation of local and virtual communities to encourage each other's use of fuel cell technology. Make it cool to be a customer (like Harley Davidson HOGs). Referral plans should be easy to use and beneficial to the existing and referred customers. GE has a chance here to celebrate with customers. Such an approach should close the customer value gap.



Other information exists and could be explored in subsequent reports. Do note that GE Energy is a new name; you may be more familiar with the previous name: GE Power. GE is working hard to ensure that all eleven of its businesses achieve double-digit growth (in earnings) consistently.

¶

One of the more significant areas of information that did not fit exactly into the sub hypotheses and their corresponding models had to do with the distribution plan in the United States, specifically Georgia. Flint Energies is the only distributor listed for the USA. I exchanged email with their VP of Member Services, Jimmy Autry. He shared a plan with me that includes distributing 10 propane-based fuel cell units in rural areas of Georgia next year. He also mentioned that one of Plug Power's parent companies (DTE Energy) has a subsidiary licensed to sell fuel cells to customers in Ohio, Michigan, Illinois and Indiana. I would not be surprised to see those areas follow Georgia in the sequence of GE's expanding customer base in the USA.

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Summary of Findings

- **Summary of Findings**
  - Fuel cells for homeowners and small businesses will meet a **current demand**
  - GE has **unique position & wherewithal** to turn fuel cell technology into marketable reality
  - **Value chain offers win-win** opportunities for all partners involved
  - GE **cornerstones define success** at every step
  - Potential **gaps can be minimized** through continuing excellent management, Six Sigma focus & customer-centric priorities

To review some of the significant findings that relate to my hypothesis, remember these:

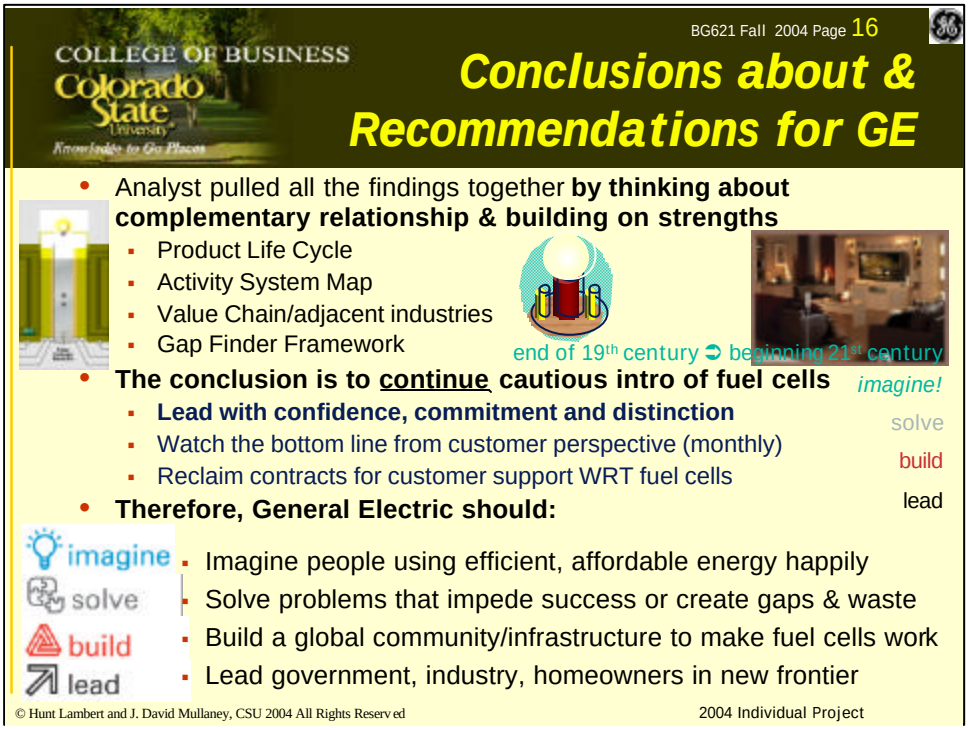
1) Fuel cells for homeowners and small businesses will meet a current demand.

2) GE has unique position & wherewithal to turn fuel cell technology into marketable reality.

3) Value chain offers win-win opportunities for all partners involved.

4) GE cornerstones define success at every step.

5) Potential gaps can be minimized through continuing excellent management, Six Sigma focus & customer-centric priorities.



"Imagine, solve, build and lead" are the actions that show GE's values (which are to be curious & passionate, resourceful & accountable, teamwork[-oriented] & committed, open & energizing). These permeate my conclusions about the fuel cell product and my respective recommendations for GE.

¶

GE should continue to pursue the fuel cell product line. How should they do it?

GE must lead with confidence, commitment and distinction. (Each of these recommendations will be explored in subsequent slides).

GE would do well to watch the bottom line from a customer perspective; when do customers really start to save money month-to-month?

GE ought to negotiate for the customer support contracts from the distributors; GE could be both a supplier and a contractor for the distributors, and GE would be able to leverage the strategic position to stay informed and to serve customers consistently.

¶

In line with GE's values and actions, they can imagine people using efficient, affordable energy (as the 21st century image suggests on the slide).*

GE can solve problems that impede success or create gaps and waste; the Plug Power demonstration model may remind you of how fuel cells contribute to problem resolution.

GE has the opportunity to build a global community and infrastructure to support the successful implementation of fuel cells as an alternative energy source.

GE's presence around the world, in the marketplace and as a historical hero allows GE to lead government, industries and homeowners in this new frontier.

¶

Imagine… solve… build… lead…

*Modern home photo was downloaded from http://www.nevillejohnson.co.uk/cinema/.
GE logos and action icons were downloaded from http://www.ge.com .

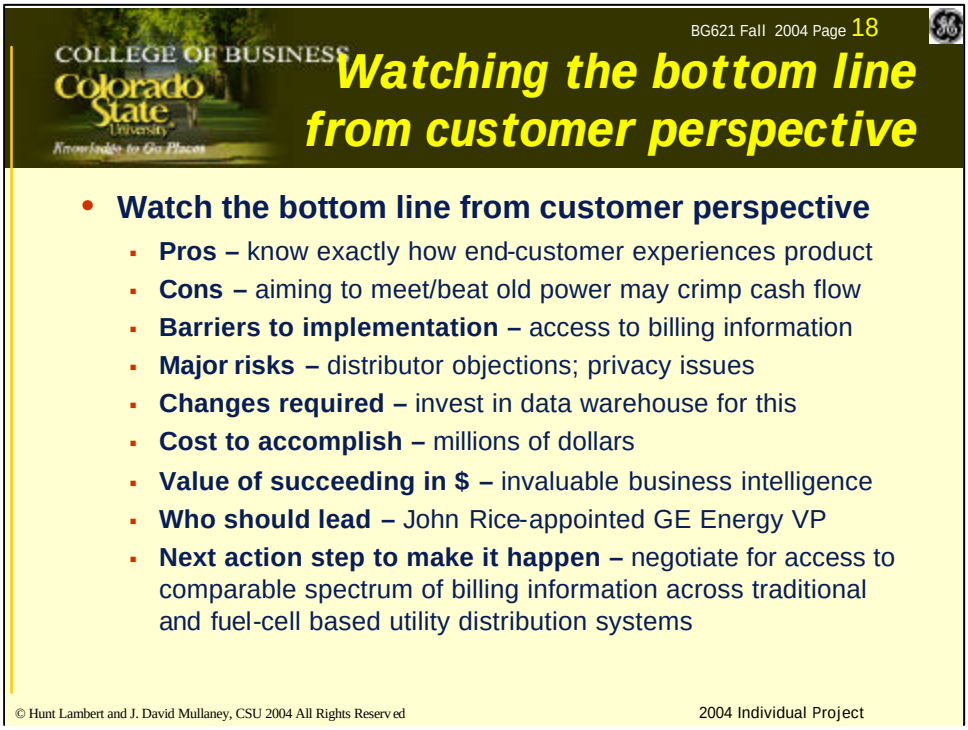
Let's consider some of the risks (positive and negative) for GE to lead with confidence, commitment and distinction. On the up side, GE can use its strength and leadership to meet the need of global demand for alternative energy, and GE can meet its own goals of double-digit earnings growth by managing the value chain.

¶

Some might argue that fuel cells are a distraction to GE Energy's other clean energy initiatives. Also, there is some level of reluctance and cynicism (especially in the USA) about the realistic potential for fuel cells to be a true alternative to the traditional power grid.

¶

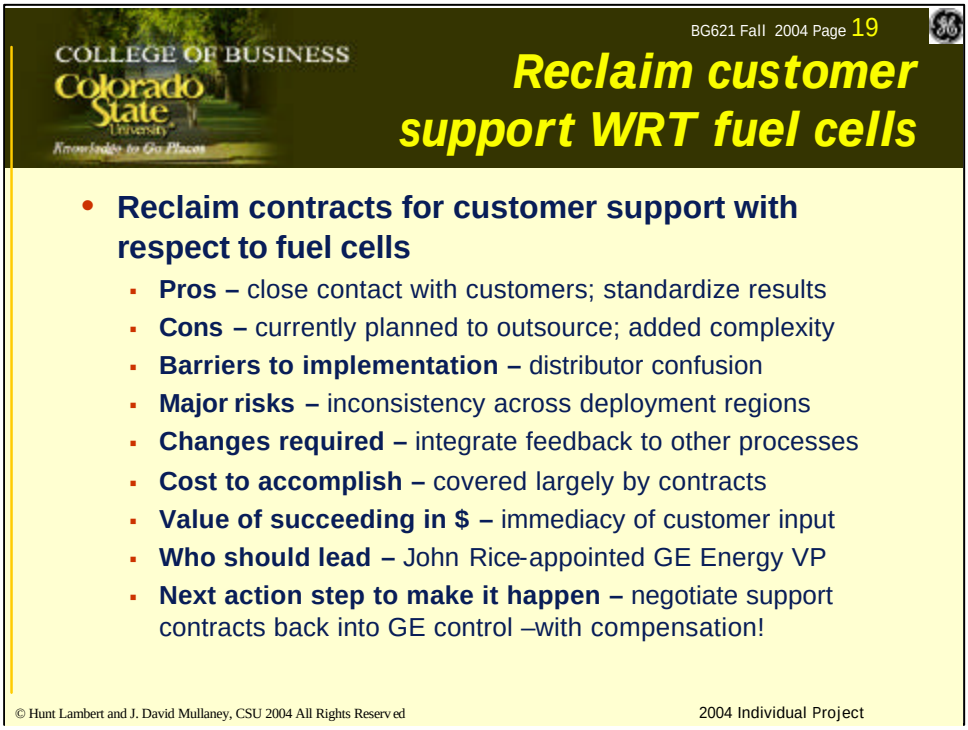
GE leadership starts with the CEO and his executives in the GE Energy business. They could develop a marketing campaign to lend GE brand and its corresponding credence to a near-term future that enjoys the benefits of fuel cell technology.



Keeping an aggressive eye on meeting or beating the traditional utility price structure will help to make the product line extremely popular, but it will raise the risk of lowering the associated cash flow. Both ends must be managed skillfully.

¶

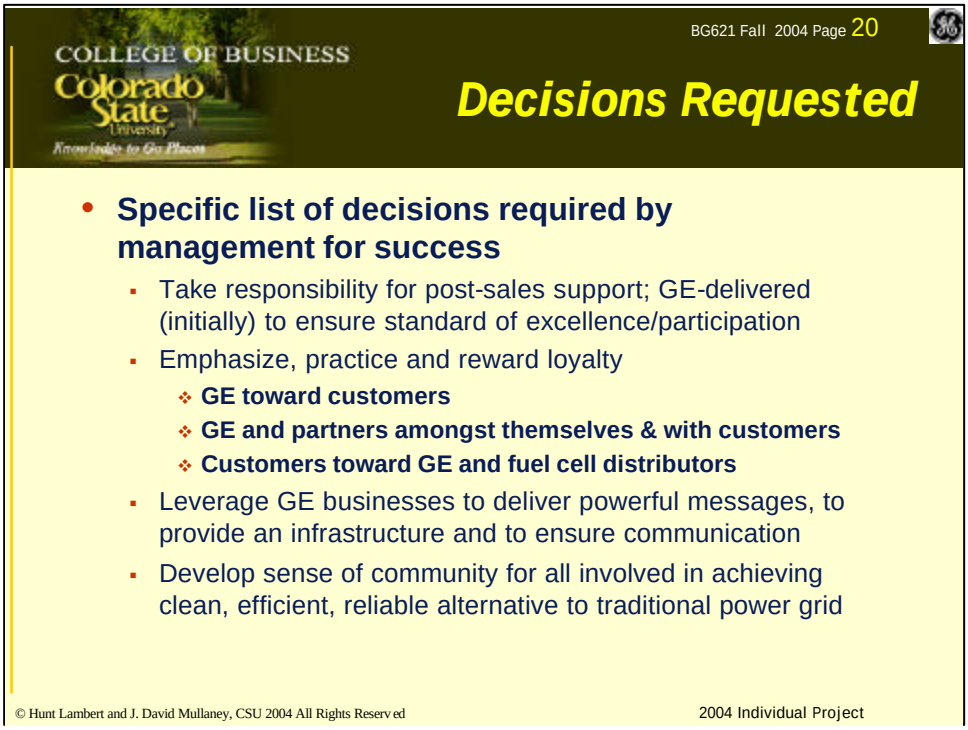
The executives of GE Energy can decide who will be responsible and authorize him or her to negotiate access to ongoing kilowatt hour charges from both the fuel cell locations and the traditional system being alleviated.



GE may not like this suggestion, but it could prove to be an important, strategic decision. If GE runs the customer support lines, then customer experience will be most consistent, and GE will have the information necessary to shape and motivate ongoing change. GE is currently planning to outsource this, and the net profit for this work may be close to zero; however, the indirect stream of goodwill and business intelligence will more than compensate for the extra work and cost.

¶

GE would have to negotiate the support contracts back into GE control; distributors should already be planning on this as an expense, so it will not be surprising that GE deserves to get compensation from them for the service.



Consider the Vision, Mission, Objectives, Strategies & Tactics that have made GE so successful. These same values and activities will lead to success around fuel cell energy alternatives. Here are the specific decisions that the GE leadership would do well to consider making:

¶

1) Take responsibility for post-sales support
2) Emphasize, practice and reward loyalty (internally and externally, toward partners and customers, and loyalty exhibited back toward GE from others)
3) Pull together all appropriate divisions to communicate confidence and to build a sound infrastructure
4) Develop a sense of community that makes electricity fun!

GE brings good things to life; that still rings true. And our living planet cries out for alternative approaches to electrical energy.

The diverse and profound strengths of GE businesses are uniquely available to make fuel cell technology a viable solution for homeowners and small businesses.

To be successful, GE must focus and measure specific elements of each cornerstone, with a clear value recognized by the customer and a profitable cash flow for GE investors.

The time is right to pursue fuel cells as an alternative to the stressed-out power grid.