

# Scenario Planning

## LESSONS FROM THE FIELD

David A.J. Axson

MANAGEMENT ACCOUNTING GUIDELINE

CASE STUDY

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### Applying Scenario Planning in a Global Context

ElectricIQ is a software company focused on the development of smart systems for the management of electric usage in factories and office buildings. Sales have reached \$40 million a year, primarily from the installation of electricity management systems in new office buildings in western Europe.

After five years in business, ElectricIQ is at a turning point. With the rapid emergence of environmental sustainability and concerns over CO<sub>2</sub> emissions as hot public policy issues, the company believes that the time is right to make a significant play for a piece of the software controls market that investments in the “smart grid” of digital environmental management systems is going to generate. Specifically, management want to gain insights as to the relative attractiveness/risk of the market for retrofitting existing infrastructure in western Europe and North America versus focusing on new construction in China, India, eastern Europe and Latin America.

The company decided to embark on a scenario planning project to help understand the alternatives in order to guide R&D investment, capital raising, marketing and product development plans. The company’s finance director and the manager of planning were chosen to lead the effort, but the CEO wants to make sure that the company taps the richest insights available. After initial discussions with the management team, the objective of the project is to: “Develop

a better understanding of the relative growth of the markets for smart grid technology in different geographies, the risk profiles of each market and the ease of access to such markets.”

The scope is limited to the market for software-based electrical control systems in the residential and office markets in North America, Western Europe and Asia.

The finance director and the manager of planning agreed to devote one third of their time to the program and each assigns a senior analyst to work full time. They also hired an outside consultant to serve as a facilitator. The deadline for completion of the scenario plan was set at 120 days.

## Driver Identification

[Figure 1](#) provides an example of how ElectricIQ identified and organized the key drivers and then tiered them to guide data collection and analysis ([Step 3](#) in the scenario planning work approach). Candidate drivers were identified in three ways:

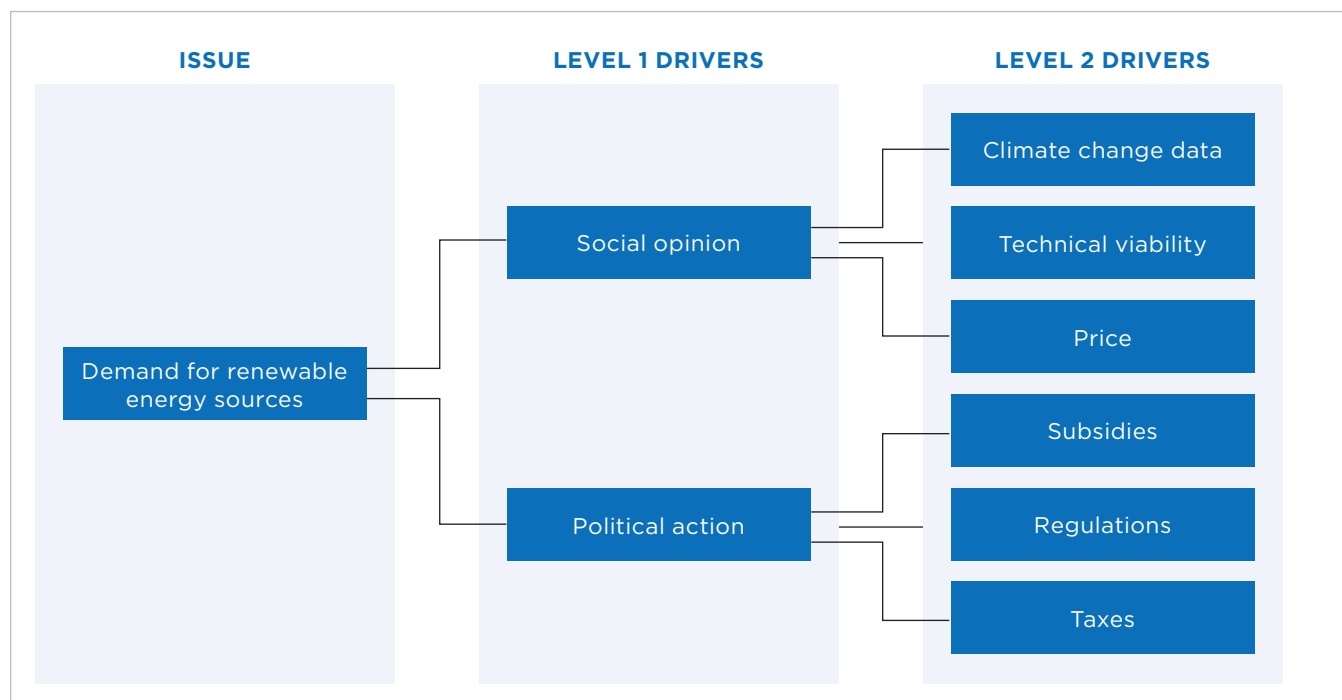
1. Views of the current management team and investors in the company,
2. Input from current customers, and
3. Discussions with external thought leaders in both the public and private sectors, including the European Community, OECD, General Electric, IBM and Shell.

Based on these discussions, the project team developed a simple driver model around the central issue of the demand for renewable energy sources. Two level 1 drivers, social opinion and political action, were identified as the two primary drivers of the future demand for renewable energy sources. However, in order to construct credible scenarios, it is necessary to define a second level driver that can direct practical data collection and analysis.

In this example, three level 2 drivers have been identified for each level 1 driver. Social opinion is seen as being influenced by the credibility of climate change data, the technical viability of potential renewable energy sources, and the price of such options. Political action is a function of:

- governments’ willingness to subsidize research into or use of renewable energy,
- the regulatory framework that is imposed on all energy, and
- the role that tax policy plays in energy use. This framework provides a basis for defining the types of data that need to be collected to help frame scenarios around the chosen issue.

FIGURE 1: ELECTRICIQ—DRIVER MAP



At ElectricIQ, the data collection effort focused on three areas:

1. Economic growth with related forecasts of construction activity,
2. Public policy and governmental actions to encourage the adoption of smart grid technology and other environmental control systems, and
3. The likely players in the market for environmental software control systems, including the entry of new innovative players.

Not all of the data needs to be quantitative—some of the most interesting inputs to scenario planning can be the diverse opinions of experts and futurists who specialize in conceptualizing alternative futures.

[Table 1](#) illustrates the types of data and their sources that ElectricIQ used in their scenario plans.

TABLE 1: ELECTRICIQ: DATA SOURCES

DRIVER	QUANTITATIVE DATA SOURCES	EXPERT OPINION	OTHER DATA SOURCES
<b>Social opinion</b>	<ul style="list-style-type: none"> <li>• Polling data</li> </ul>	<ul style="list-style-type: none"> <li>• Thought leaders</li> </ul>	<ul style="list-style-type: none"> <li>• Press coverage</li> <li>• Pressure groups</li> </ul>
<b>Climate change</b>	<ul style="list-style-type: none"> <li>• Climate statistics</li> <li>• CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>• Futurists</li> <li>• Climatologists</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental impact analyses</li> </ul>
<b>Technical viability</b>	<ul style="list-style-type: none"> <li>• Adoption rates</li> <li>• Product availability</li> </ul>	<ul style="list-style-type: none"> <li>• Scientific journals</li> </ul>	<ul style="list-style-type: none"> <li>• Patents</li> <li>• New product launches</li> </ul>

DRIVER	QUANTITATIVE DATA SOURCES	EXPERT OPINION	OTHER DATA SOURCES
<b>Pricing</b>	<ul style="list-style-type: none"> <li>Relative pricing</li> <li>Economic cost</li> <li>Vehicle sales</li> </ul>	<ul style="list-style-type: none"> <li>Demand patterns and forecasts</li> </ul>	<ul style="list-style-type: none"> <li>Consumer willingness to pay</li> </ul>
<b>Political action</b>	<ul style="list-style-type: none"> <li>Polling data</li> <li>Renewable usage</li> </ul>	<ul style="list-style-type: none"> <li>Think tanks</li> </ul>	<ul style="list-style-type: none"> <li>Policy statements</li> <li>Lobbyists</li> </ul>
<b>Subsidies</b>	<ul style="list-style-type: none"> <li>Availability</li> <li>Level of investment</li> <li>Acceptance rates</li> </ul>	<ul style="list-style-type: none"> <li>Economists</li> <li>Environmental scientists</li> </ul>	<ul style="list-style-type: none"> <li>Behavioral studies on impact</li> </ul>
<b>Regulation</b>	<ul style="list-style-type: none"> <li>Emissions growth (decline)</li> <li>Violations</li> </ul>	<ul style="list-style-type: none"> <li>Evolution of regulation</li> <li>Legal experts</li> </ul>	<ul style="list-style-type: none"> <li>Legislative agendas</li> <li>Government agencies</li> </ul>
<b>Taxation</b>	<ul style="list-style-type: none"> <li>Redistribution effects</li> <li>Growth rates</li> </ul>	<ul style="list-style-type: none"> <li>Assessment of scope and impact</li> </ul>	<ul style="list-style-type: none"> <li>Macroeconomic policy analyses</li> </ul>

## Understanding the Relationships Between Drivers

[Figure 2](#) shows how the ElectricIQ team assessed their drivers. Drivers that are both material and reasonably predictable (baseline for all scenarios) can form a consistent basis for all the scenarios that are to be developed. Taken together, both the resilient and adaptive drivers in RAISE are fulfilled as they are meant to be strategic and long-lasting, able to withstand and adapt to the disruptive and ever-evolving demands of the marketplace. Those that are material, but difficult to predict (key drivers), will be those that define the differences between the scenarios.

After collecting and analyzing the data, the team updated the drivers identified in [Step 2](#) that focused on the overall market and identified those that were most likely to shape the demand ([Table 2](#)) for their products in the future.

FIGURE 2: EVALUATION AND IDENTIFICATION OF KEY DRIVERS

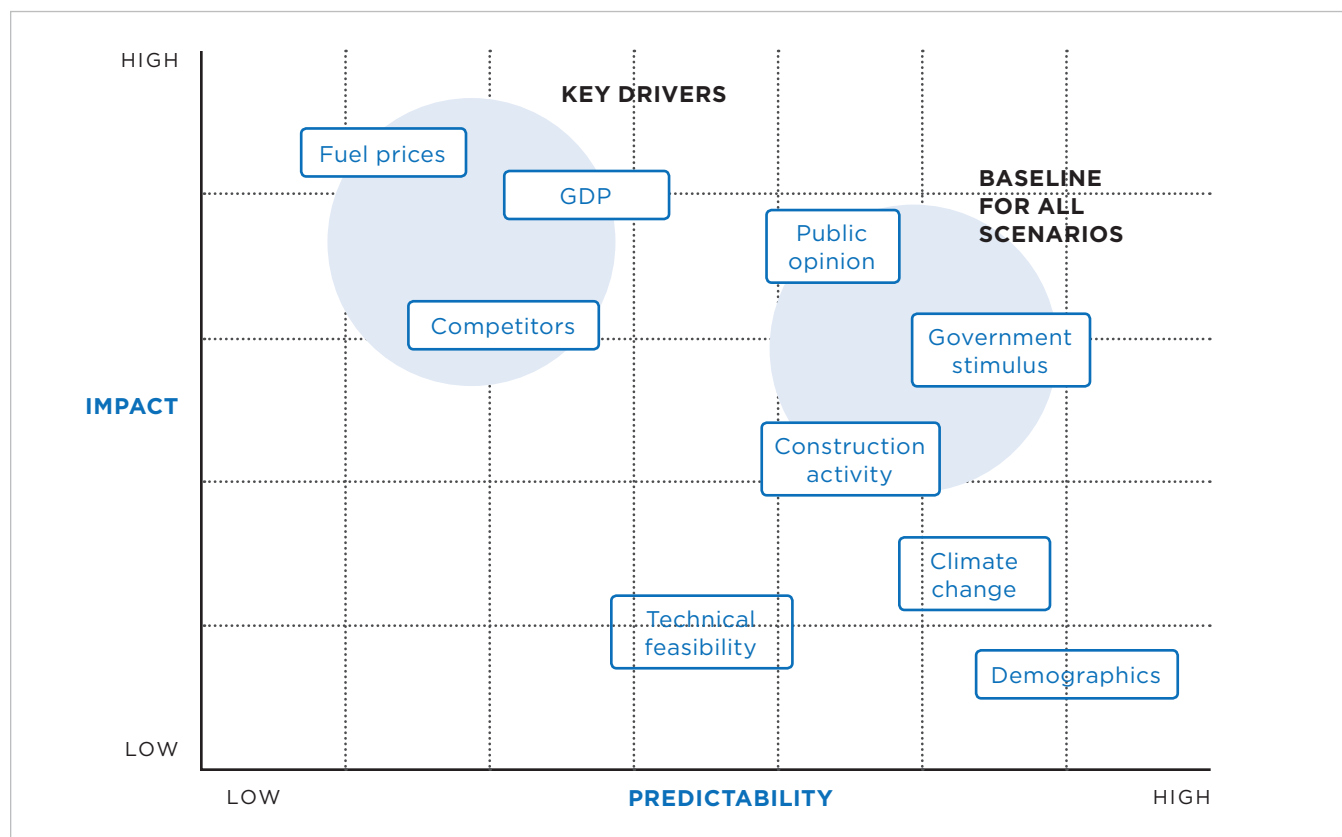


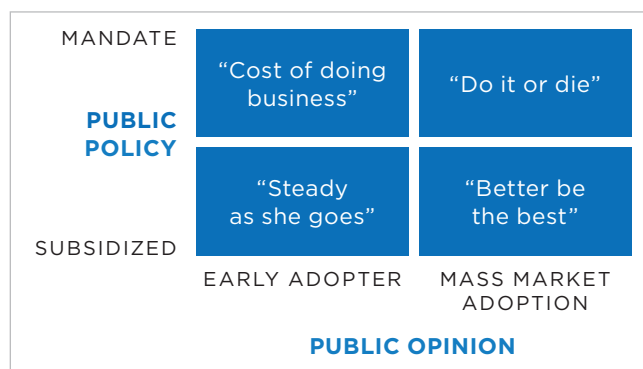
TABLE 2: LIKELY DRIVERS OF DEMAND

DRIVER	HIGH IMPACT
<b>More predictable</b>	<ul style="list-style-type: none"> <li>• Availability of government stimulus</li> <li>• Public opinion</li> <li>• Construction activity (at a given GDP level)</li> </ul>
<b>Less predictable</b>	<ul style="list-style-type: none"> <li>• GDP growth rates</li> <li>• Fuel prices</li> <li>• Emergence of new competitors</li> </ul>

ElectricIQ adopts the matrix approach and constructs four different scenarios across two dimensions (Figure 3). The dimensions are:

1. public opinion, which describes the level of consumer demand for environmentally friendly or “green” solutions, and
2. public policy, which describes the extent to which government policy incentivizes or mandates “green” standards.

FIGURE 3: SCENARIO DEVELOPMENT



This leads ElectricIQ to define four different scenarios to guide their planning:

1. **Necessity—“Do it or die”:** Public opinion swings rapidly to green solutions and dramatically changes customer buying patterns. Products not seen as being green are shunned in the marketplace. Governments mandate adoption of environmentally friendly technologies for new construction and remediation for all existing construction.
2. **Market-driven—“Better be the best”:** Public opinion moves to green and consumers are willing to pay extra for the best green products. Governments offer some incentives. Adoption is balanced between market innovation and a series of tax-based incentives by governments to encourage adoption of smart grid technologies. Being green becomes a source of competitive advantage.
3. **Mandate—“Cost of doing business”:** Governmental action leads to hard mandates for adoption in the California model. Little support is provided and adoption becomes a “cost of doing business,” akin to a tax. Public opinion is not a major driver—consumers will not pay more for green solutions unless forced to do so through taxation or mandate.
4. **The “S” Curve—“Steady as she goes”:** Demand for smart grid systems follows a traditional adoption cycle of early adopters leading the way at high prices. As the market scales and prices drop, mass market adoption takes off before flattening out as maturity is reached. Little effective public policy or incentives are provided/needed. Let’s look at how the four scenarios ElectricIQ defined in the previous step could be used to frame strategies ([Table 3](#)) and make decisions affecting key elements of the business.

## Using the Results

The finance team at ElectricIQ used the scenario plans to:

- Recast budgets under each scenario to assess the financial implications on revenues, margins, cash flows and capital expenditures.
- Test the financial impact of alternative approaches under each scenario.
- Identify leading indicators and key performance metrics that can provide the organization with an early warning that the most likely future scenario is changing.

**TABLE 3: SCENARIO IMPLICATIONS**

	DO IT OR DIE	BETTER BE THE BEST	COST OF DOING BUSINESS	STEADY AS SHE GOES
<b>Approach to innovation</b>	The minimum is not enough; must be best to win	Innovative leadership has real value	Must meet the standards; little advantage in being ahead of the curve	Focus on select areas where there is strong demand and we have a capability
<b>Marketing strategies</b>	Either be the safe option (compliant) or the best option	Must be a leader	Partner with builders and owners to secure share	Be number one in select niches
<b>Market goals</b>	Own the high end	Acquire share	Be the preferred supplier	Build share in niches
<b>Financial goals</b>	High margins	Focus on size and scale	Low-cost producer	Modest growth over time

**Table 4** shows how ElectricIQ's finance team used the scenarios to develop a high-level financial model that laid out how forecasts of key market measures, business volumes and financial measures would change under each scenario.

**TABLE 4: SCENARIO FORECASTS 2011-2013**

MARKET: WESTERN EUROPE				
All metrics expressed as percentage change from the current three-year trend (2008-2010)	SCENARIO			
	Do it or die	Better be the best	Cost of doing business	Steady as she goes
	A	B	C	D
<b>MARKET METRICS</b>				
GDP growth	3%	5%	1%	2%
Demand: New construction	15%	24%	5%	4%
Demand: Remediation	20%	22%	8%	4%
<b>ELECTRICIQ VOLUMES</b>				
Existing products	12%	32%	3%	7%
New products	5%	28%	1%	3%
Western Europe share	2%	7%	0%	0%
<b>ELECTRICIQ KEY FINANCIALS</b>				
Revenues	18%	30%	3%	5%
Gross margins	4%	8%	0%	2%
Net margins	7%	12%	1%	1%
R&D investment	15%	25%	9%	5%

Based on the results of the scenario planning, the company decides to target its investments toward achieving a leadership position in delivering solutions that far exceed the mandated minimums while keeping pricing reasonable. They believe this is possible because their current product range already delivers results that are superior to the new standards. ElectricIQ decides to update its scenario plans at least annually, given the pace of evolution of the environmental agenda around the world. All such tactics were instrumental in delivering a resilient, adaptive, innovative and sustainable edge.

This case study is based on a real organization (the author serves on its board and finance committee); however, the content has been modified for illustrative purposes

## Applying Scenario Planning at a Not-For-Profit

### Background

Summit Path School (SPS) is an independent, coeducational school with 600 students in preschool through grade eight. Three major population centres totaling more than three million people lie within 25 miles of the school. The region was once a major manufacturing centre. Over the last 30 years, the region has experienced a major transformation as the once-dominant manufacturing sector declined. The few growth sectors in the economy are focused on health care, local government, services, and specialty chemicals. During 2007, signs were emerging that the economy may be stalling so the school's board decided to use a scenario-based planning approach to help gain a better understanding of the implications for the school of alternative future operating environments.

### STEP 1 Define Scope, Issues & Time Horizon

Given the national economic uncertainty, the changing nature of the local economy and broader demographic and social trends, the board wanted to better understand how the region may evolve/develop over the next decade in order to develop a long-term strategy for the school that can guide marketing, student recruitment, programming and capital investment. Specifically, the board wanted to answer two questions:

1. What will the region look like in 10 years' time?
2. How will that influence the demand for a Summit Path education?

Answering these questions demonstrated the need to consider how SPS would remain resilient, adaptive, innovative and sustainable given the confluence of internal and external forces. A team of two members of the board, the school's CFO and two faculty members was formed. In addition, a broader group of internal and external subject matter experts who could provide input in specific areas, such as the changing economics of education, the impact of environmental issues, local economic trends and social attitudes to private education, were identified.



## STEP 2 Define Key Drivers

The project team developed a list of likely drivers of the future for both the school and the region. The list was created through a series of focus groups with the faculty and administration, the board, parents, and local political and economic leaders. A subset of the drivers identified is shown in [Table 5](#).

The team also looked to see if new drivers are likely to emerge that have not historically been material to the school. A number of candidates were identified, such as:

- the likely requirements for environmental sustainability,
- attitudes to homeschooling, and
- new curriculum alternatives, with a specific focus on globalization, language and technology.

**TABLE 5: INTERNAL AND EXTERNAL DRIVER IDENTIFICATION**

INTERNAL TO THE SCHOOL	EXTERNAL TO THE SCHOOL
Quality of the faculty	Economic growth—local and national
Quality of the curriculum	Demographic change
Student outcomes (test results, post-SPS path)	Public policy—state and federal
Marketing effectiveness	Availability and price of alternatives
Affordability (pricing/financial aid capacity)	Social attitudes to private education
Expense management	Changing educational delivery methods
Endowment growth and returns	Parental expectations
Perceived value relative to alternatives	Adoption of home schooling

## STEP 3 Collect & Analyze Data

In step 3, the team gathers historic and forecast data around each of the likely drivers. Data is collected from a number of sources including:

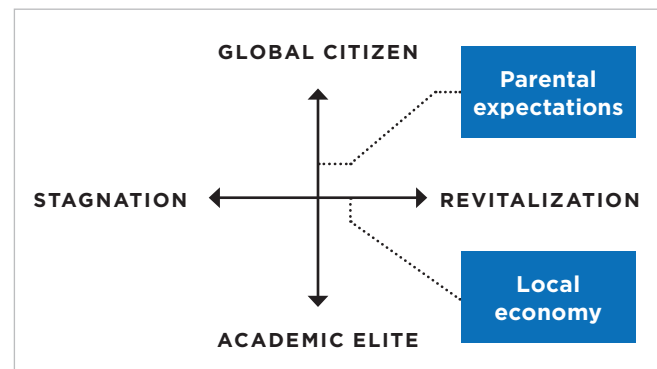
- Government, including the IRS, department of education and state agencies;
- Private sector, including banks, economic forecasters and think tanks;
- Educational institutions, including the National Association of Independent Schools and local school boards; and
- Internal information regarding student and parent demographics, economic profiles, financial aid patterns, post-graduation careers, etc.

The team analyzed the data using a variety of different techniques such as statistical modeling, root cause analysis and “what if?” questions to look at the relationships between different drivers and to understand the ability to predict future outcomes with any degree of certainty.

After a number of iterations, including a review with the full board, the team hones in on two primary dimensions that seem to best encompass the range of future scenarios:

1. **The local/regional economy:** This is the primary external influence on a number of key drivers for the school, such as the pool of potential families who can afford a Summit Path education, the relative strength of alternative offerings from public and parochial schools, and the ability to increase the school's endowment. The spectrum runs from a stagnant local market to a revitalized and growing economy.
2. **The expectations of parents from a private school education:** This driver influences much of the internal structure of the school, including curriculum, programming, staffing needs, and physical plant requirements. The spectrum runs from a parental focus on academics only to one where parents are seeking an education that prepares their children to become well-rounded global citizens and includes the alternative option of home schooling.

**FIGURE 4: DEFINING AXES FOR SCENARIO DEVELOPMENT**



The team developed descriptors for each end of the spectrum along each dimension (Figure 4). For the economy, the two extremes were defined as “stagnation” and “revitalization,” and for parental expectations: “global citizen” and “academic elite.”

#### STEP 4 Develop Scenarios

Having identified the two primary dimensions, the team plotted each dimension onto a matrix (Figure 5) to frame a possible set of future scenarios.

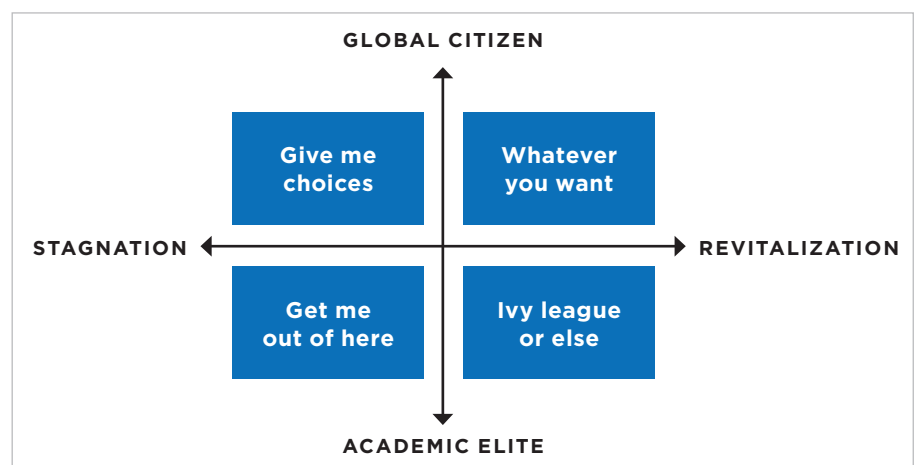
The team developed labels for each of the four quadrants as a frame of reference. They came up with “Give me choices,” “Whatever you want,” “Get me out of here,” and “Ivy League or else.”

With the basic framework for the scenarios in place, the team looked at the behavior of each of the key drivers under each scenario and drafted narrative descriptions for each.

#### Give me choices

The local economy is stagnant with little growth in population. The public school system is weak and constantly wrestling with budget cuts. However, the global economy is reasonably strong, fueled by massive investments in environmental technologies. Global connections fueled by technology continue quickly and young

**FIGURE 5: SCENARIOS**



people are increasingly mobile in both their physical location and career choices. Parents want their children to get a good academic grounding but also value development of their children into socially aware and responsible citizens with a strong commitment to service and sustainability.

### **Whatever you want**

Choice matters. The key requirement of parents is to provide their children with the broadest range of opportunities possible in a changing world where globalization, sustainability, and technology are the dominant drivers of economic growth and social development (all key drivers in the RAISE philosophy to ensure an organization's (or enterprise's) sustainable edge). Parents are willing to pay a premium for an education that provides their children with an advantage in terms of the breadth and strength of academic and personal development programs. The region is successfully emerging from a prolonged downturn on the back of high technology, specialty, chemical, and renewable resource businesses, a thriving health care sector and continued population growth in nearby rural areas.

### **Get me out of here**

Education is seen as the only viable way to escape the stagnant local economy. The local public school systems are deteriorating and Summit Path is seen as one of the few credible educational establishments. Those parents who can afford a private education will pay for their children to attend Summit Path if the academic return on their investment, measured in terms of test scores, and high school and college admissions for SPS graduates, is demonstrably better than the alternatives. However, the pool of families who can afford an SPS education is dwindling.

### **Ivy league or else**

Parents are focused on academic excellence and seek out the very best education for their children and are willing/able to pay a premium for it. Educational achievement becomes the passport to everything in a manner very similar to Japan. Non-academic activities are tolerated only to the degree that they enhance the chance of future academic success.

## **STEP 5 Apply Scenarios**

Having developed four different scenarios, the team then went through a process of analyzing the impact of each scenario on key aspects of the school from enrollment to the curriculum. [Table 6](#) summarizes some of the findings.

TABLE 6: SCENARIO IMPACT ASSESSMENT

	GIVE ME CHOICES	WHATEVER YOU WANT	GET ME OUT OF HERE	IVY LEAGUE OR ELSE
<b>Enrollment</b>	Reduce to two streams per grade (400+)	Three streams full enrollment (560+)	Reduce to two streams per grade (400+)	Three streams full enrollment (560+)
<b>Tuition pricing</b>	Seek to minimize need for financial aid with a smaller enrollment	Emphasize diversity and price to achieve	Selective use of financial aid to manage enrollment levels	Full price with limited financial aid
<b>Market positioning</b>	The best education in the region	Develop the global leaders of tomorrow	Clearing a path to success	Superior academic achievement guaranteed
<b>Curriculum</b>	Structure driven by need to maximize student options upon graduation within the confines of a limited budget	Breadth and choice emphasized—options such as Mandarin, performing arts offered	Excellence in the basics; outperform the public alternatives by a wide margin	Singular focus on preparing for elite high schools and colleges
<b>Endowment</b>	Steady focus on growing size of unrestricted funds that can offset tuition and staff costs	Aggressive solicitation to fund new programs and plant	Balance endowment growth with annual giving to manage to a tight budget	Aggressive growth but with a focus on funding to reduce student/teacher ratios

This impact assessment was then used to test the degree to which current strategies and plans made sense under each scenario. Where appropriate, changes were made to minimize the downside impact. The board's chosen strategy was modeled on the "whatever you want" scenario that balances academic excellence with global citizenship. The school's location in a national park lends itself to creating a model of environmental responsibility, with plant and programs designed to not only be green but also prepare students to be effective and responsible citizens.

Although this scenario is the preferred one, the board recognizes that each of the other three scenarios are plausible, if not probable, outcomes, so they resolve to closely monitor the situation and adjust plans if needed (demonstrating the *adaptability* driver in RAISE). The CFO's team also developed alternative views of the school's five-year financial plan and 10-year capital plan under each of the different scenarios in order to establish the trade-offs that would need to be made in each situation.

## STEP 6 Monitor & Update

SPS used the scenario plan in two primary ways:

1. As a means of communicating the school's strategy and plans to various constituencies, including board members, faculty and administration, donors, current and prospective parents and accreditation bodies.
2. As a starting point for the annual and strategic planning process. The scenarios are updated (and sometimes redefined) based on the latest and greatest information now available.

Going forward, the school plans to refresh the scenarios every two to three years, or when a material event dictates the need. In reviewing the value of the exercise, the board commented that, "Going through the process was as valuable as the results since it gave everyone an appreciation of the significant impact changes in certain key drivers could have on the school."



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