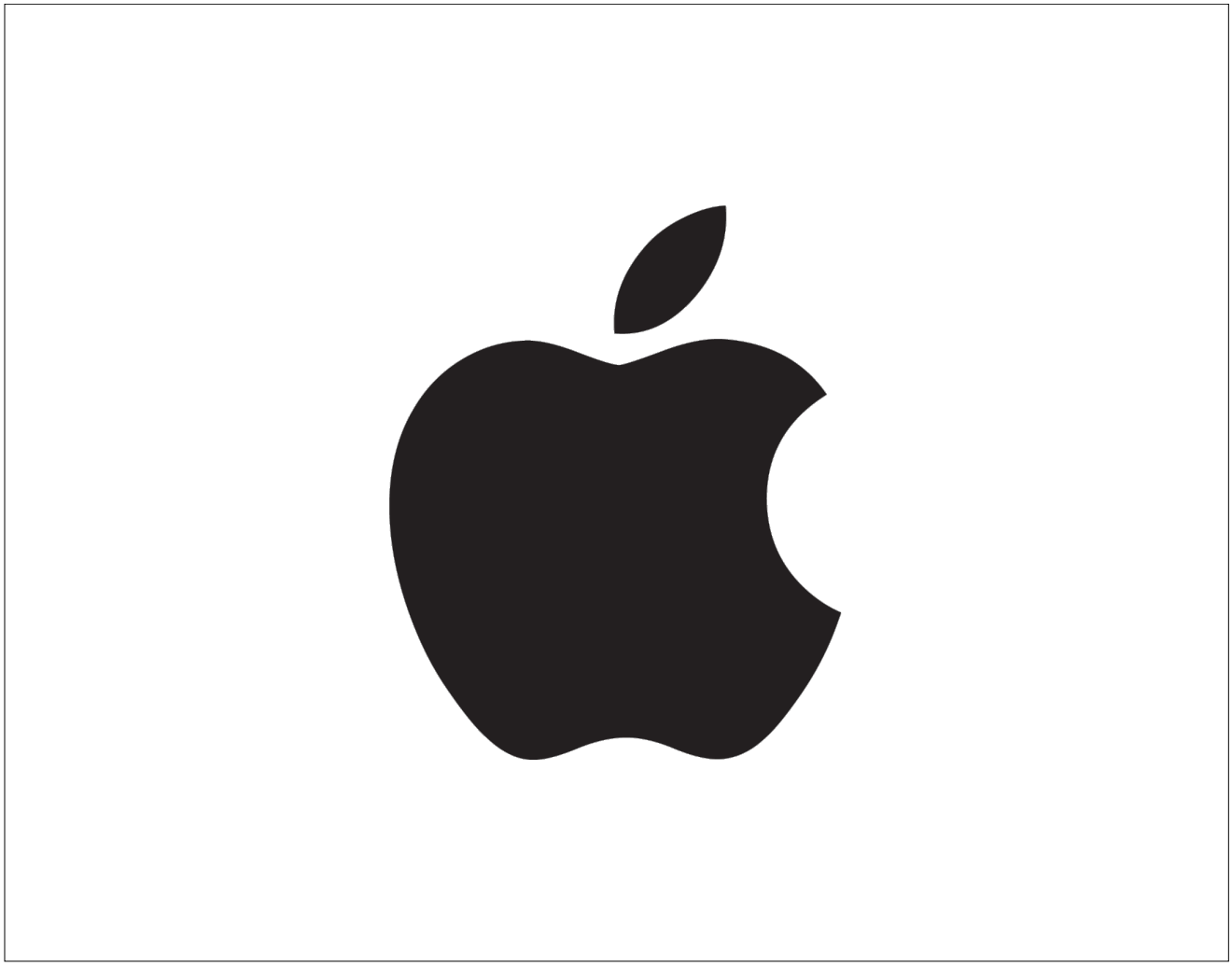

Apple Pittsburgh

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OVERVIEW

Apple Inc. is an American multinational technology company based in Cupertino, California. They specialize in designing developing and selling consumer electronics, computer software, and other various online services. The products they make are simple in design and easy to use. They are known for superior products and strong customer service, and Apple considers themselves to be innovators in multiple industries.

With the expansion of its product lines and services, Apple started opening regional offices, Data Centers and R&D facilities across the country. Apple first came to the Pittsburgh Market when it partnered with Carnegie Mellon University, by opening a small R&D facility on CMU's campus. In 2014 Apple started looking for 20,000 sq. ft of new office space to expand its presence in Pittsburgh. Our group decided to use this real life example for our decision model. The main goal of the model examines what geographic location would be the best fit for Apple to open a new office. Unfortunately, we were unable to find a lot hard factual details that Apple's decisions makers would have, so there were several assumptions made during the creation of this model. To breakdown the decision, we had to consider a wide range of criteria and rank them by significance. Ultimately, the social, economic and environmental factors are what led to the final the decision.

Figure 1.0 — City of Pittsburgh Overview with all sites visible and Lower Hill site outlined

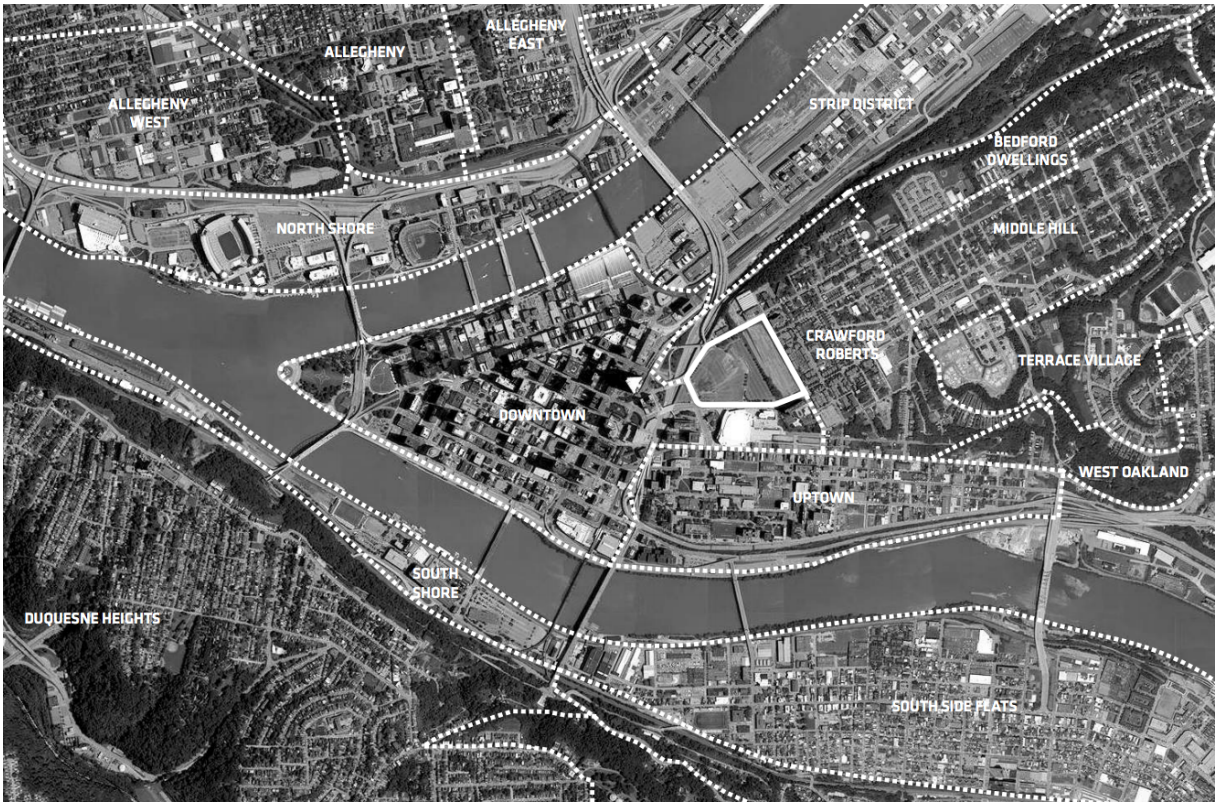


Figure 1.1 — Downtown Pittsburgh Overview with the Lower Hill outlined, also showing Strip District in upper right

Impact

When examining the impact, we look at all the stakeholders involved. The two groups impacted the most are Apple and the City of Pittsburgh. The BOCR matrix does a great job of breaking down the benefits, opportunities, costs and risks to both parties involved. The city of Pittsburgh will be positively impacted as new jobs are created both directly and indirectly. Additionally, the city will likely see a surge of economic activity with local large and small business. As an example, apple employee's will eat, drink and shop at local businesses. Taxi companies and airlines will also see increased activity and more people commute to and from work. This will also bring higher paying jobs to the city and as competition in the market grows, average wages will increase. Equally as important, the presence of Apple provides a great opportunity for the local universities for partner with. However, it's also important to examine possible negative effects. We can see these under the costs and risks on the BOCR. Although Apple will bring higher paying jobs, it's likely this positive impact will also drive up the cost of living. While some are positively impacted, other small businesses may not be able to keep up with rising cost. This is similar to what has happened in the California Bay area with the recent tech boom. Its also important to consider environmental issues. Because of the nature of Apple's business, there is a low risk of added pollution, however, a large company like Apple would lead to high energy usage. Lastly, we examined economic risks. Once Apple is well established, the economy will all into place around it. If Apple has to pull out of Pittsburgh in the future, the local economy could suffer a huge loss. Ultimately, our decision model examines all of the effects and also looks at the BOCR from the viewpoint of the Apple Decision makers as well.

Figure 2.0 below shows both the Lower Hill site (bold polygon) and the Strip District (upper right).

Objective

Through the Complex Analytical Network Process, we hope to arrive at a conclusion for the Apple Pittsburgh's site location. In this type of analysis we use Benefits, Opportunities, Costs and Risks for to evaluate each solution (or alternative).

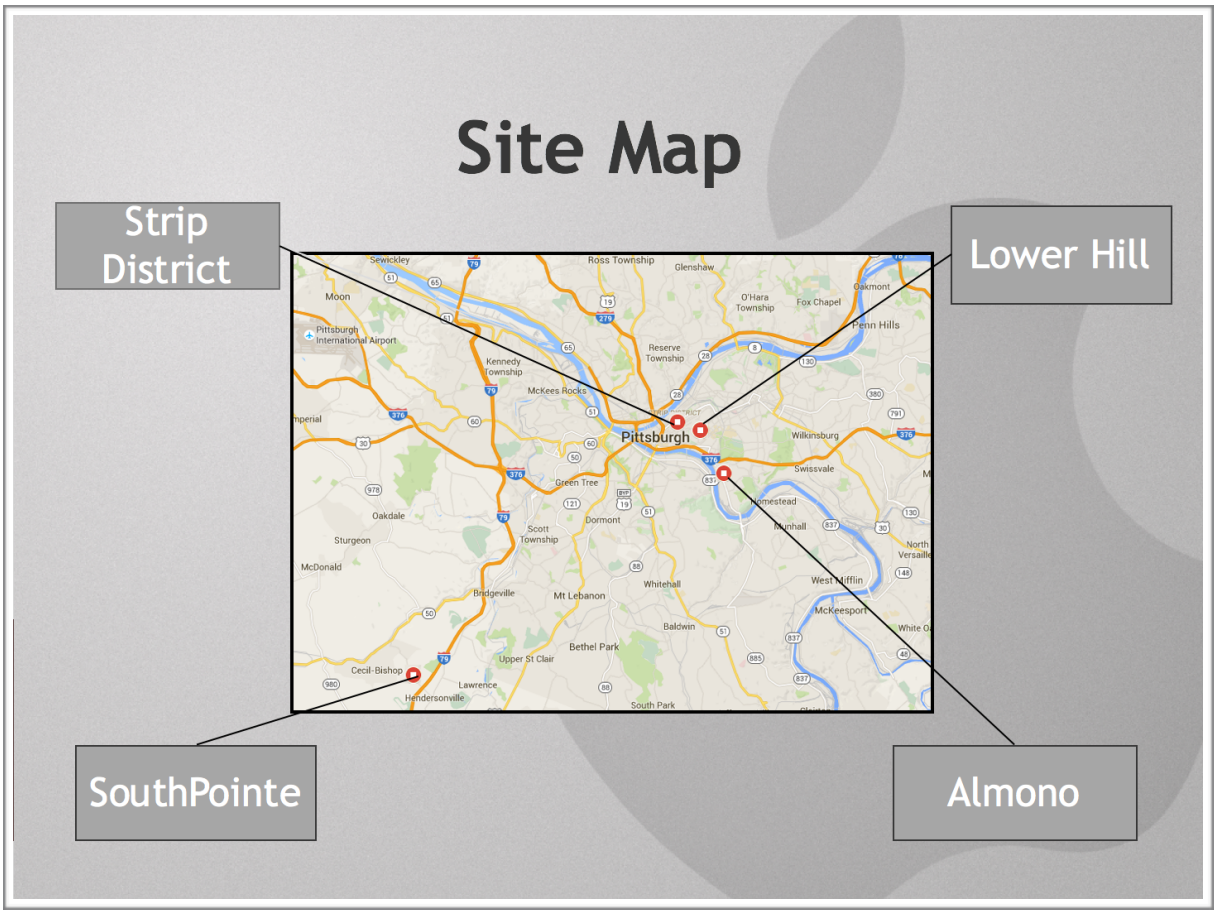
Four options have been selected as suitable alternatives. In this case, the alternatives present themselves as:

- Almono — Specially Planned District
- Lower Hill — Specially Planned District
- Southpointe — Suburban Office Park
- Strip District — Historic City Neighborhood

Almono and Lower Hill sites both represent Specially Planned Districts, which are one type of planned development district in the City of Pittsburgh. Both sites are located between the Monongahela and Allegheny Rivers just a few minutes from Downtown Pittsburgh. SP Districts are intended to provide a flexible framework for alternative forms of development on very large sites of City-wide importance. These create efficient, functional and attractive urban areas that incorporate high quality urban design, a variety of public amenities, and protection of natural resources.

Southpointe represents a suburban business park, and it is located Washington County, Cecil Township, near Canonsburg, Pennsylvania, 17 miles South of Pittsburgh. It is home to many corporations, including large corporations such as CONSOL Energy, Ansys, Range Resources, Halliburton, & Mylan Labs among many others.

The Strip District is a historic neighborhood located near downtown Pittsburgh between 13th and 33rd Streets along the Monongahela River. It was previously an important industrial and raw materials center for the City of Pittsburgh. Former tenants of the neighborhood include, ALCOA, Westinghouse, US Steel, and the HJ Heinz Company.



The BOCR nodes help to produce the most valuable outcome; however, we cannot say that the BOCR merits are weighted equally. For instance, a core value for Apple is their care for the environment and other social responsibilities while remaining financially profitable. This is especially important to note because Apple often places their core principles over shareholder profits. To distribute the perceived values, a ratings model has been applied to appropriately determine the magnitude of each merits' influence in the decision. We categorize the value of each BOCR merit for the corresponding three control criteria. The ratings selected for the synthesis are below.

Super Decisions Ratings

	Priorities	Totals	Economic 0.250000	Social 0.500000	Environmental 0.250000
Benefits	0.309512	0.720418	Very Strong	Strong	Strong
Costs	0.309512	0.720418	Very Strong	Strong	Strong
Opportunities	0.190488	0.443379	Strong	Medium	Medium
Risks	0.190488	0.443379	Strong	Medium	Medium

Figure 3.0 — Super Decisions Ratings

Network

The model integrates a complex structure of decision criteria and pair wise comparisons. For the first subnet of each BOCR merit node, we have chosen "Economic", "Social", and "Environmental" to describe groups of our control criteria. See the figure below for a representation of the primary subnet for Benefits node.

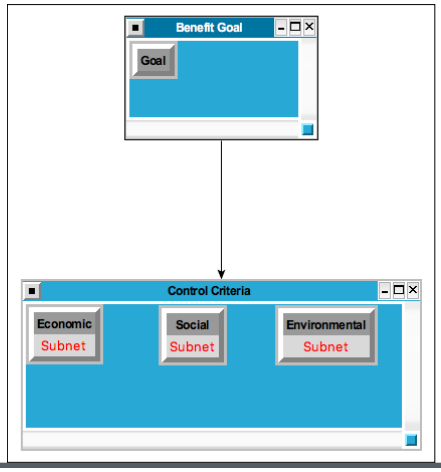


Figure 4.0 — Benefits Subnet

Within these groups, we have constructed networks to prioritize the value of each alternative. The full network summary to the third level is given in the following table. The table depicts the priorities associated with each criteria.

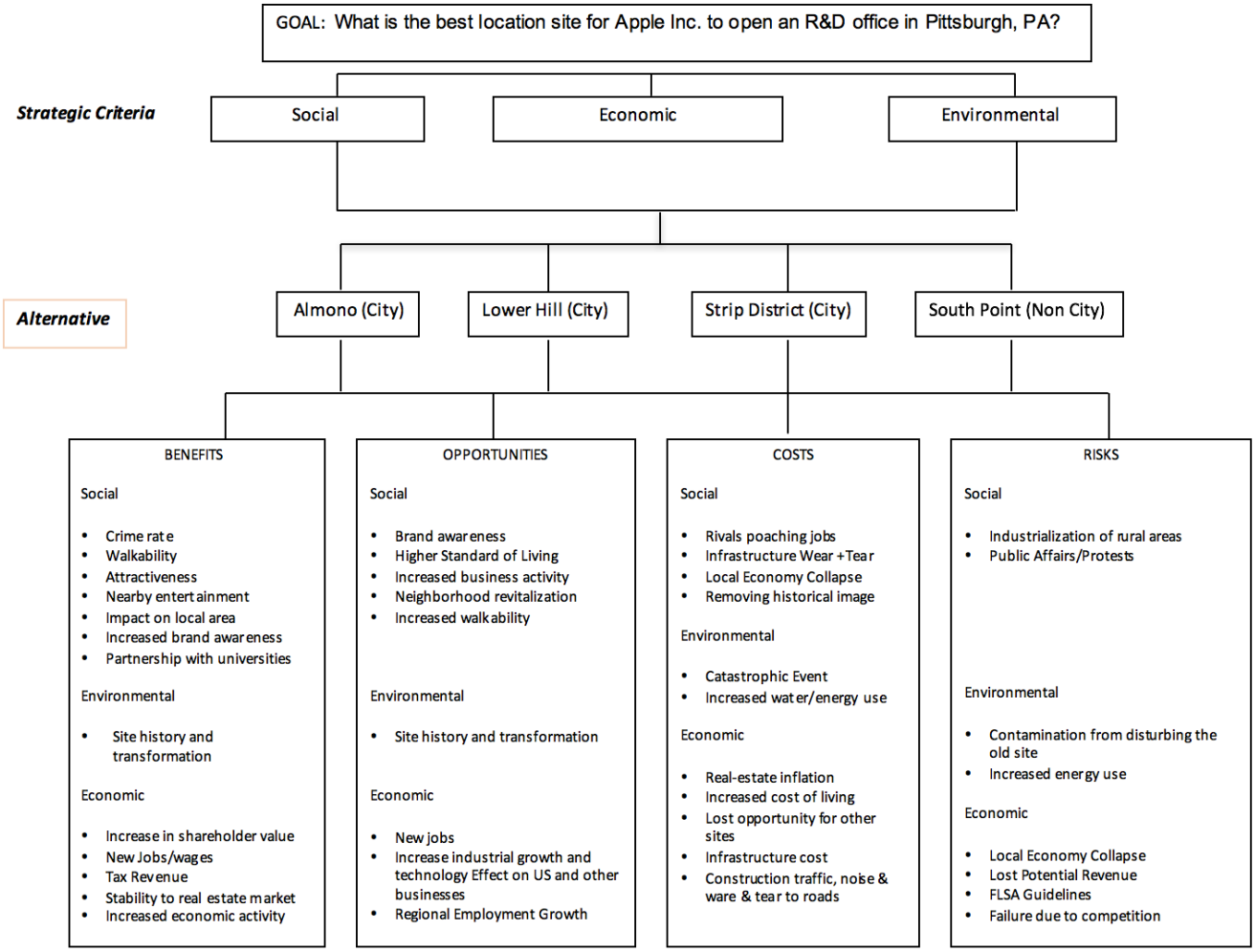


Figure 5.0 — Network Summary

Results

A synthesis was executed for each of the BOCR merit nodes. The results are depicted in the following table.

Benefits Synthesis

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Subnet under Benefits

Name	Graphic	Ideals	Normals	Raw
Almono		0.670101	0.230423	0.670101
Lowerhill		1.000000	0.343863	1.000000
Southpointe		0.551115	0.189508	0.551115
Strip District		0.686915	0.236205	0.686915

Opportunities Synthesis

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Subnet under Opportunities

Name	Graphic	Ideals	Normals	Raw
Almono		0.853386	0.277344	0.853386
Lowerhill		1.000000	0.324992	1.000000
Southpointe		0.436626	0.141900	0.436626
Strip District		0.786983	0.255764	0.786983

Costs Synthesis

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Subnet under Costs: formulaic

Almono	0.537936	0.252270	0.521289
Lowerhill	1.000000	0.468959	0.969055
Southpointe	0.129747	0.060846	0.125732
Strip District	0.464698	0.217924	0.450317

Risks Synthesis

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Subnet under Risks

Almono	0.817178	0.372285	0.772039
Lowerhill	1.000000	0.455573	0.944763
Southpointe	0.151624	0.069076	0.143248
Strip District	0.226234	0.103066	0.213738

Overall Model Synthesis - Multiplicative (Short term)

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Super Decisions Main Window: Apple Pittsburgh - V32.sdmod: formulaic: ratings

Name	Graphic	Ideals	Normals	Raw
Almono		0.106353	0.066120	1.420915
Lowerhill		0.081755	0.050827	1.092268
Southpointe		1.000000	0.621699	13.360340
Strip District		0.420389	0.261355	5.616540

Overall Model Synthesis - Additive (Long term)

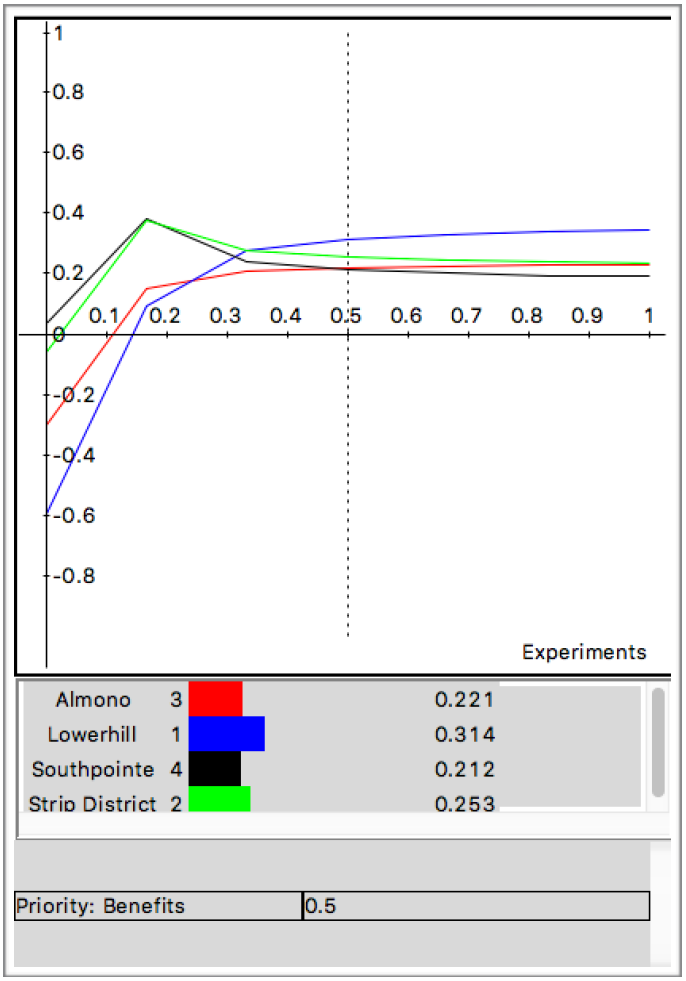
Here are the overall synthesized priorities for the alternatives. You synthesized from the network Super Decisions Main Window: Apple Pittsburgh - V33.sdmod: formulaic: ratings

Almono		0.328211	0.136295	0.061555
Lowerhill		0.107174	0.044506	0.020100
Southpointe		1.000000	0.415268	0.187546
Strip District		0.972700	0.403931	0.182426

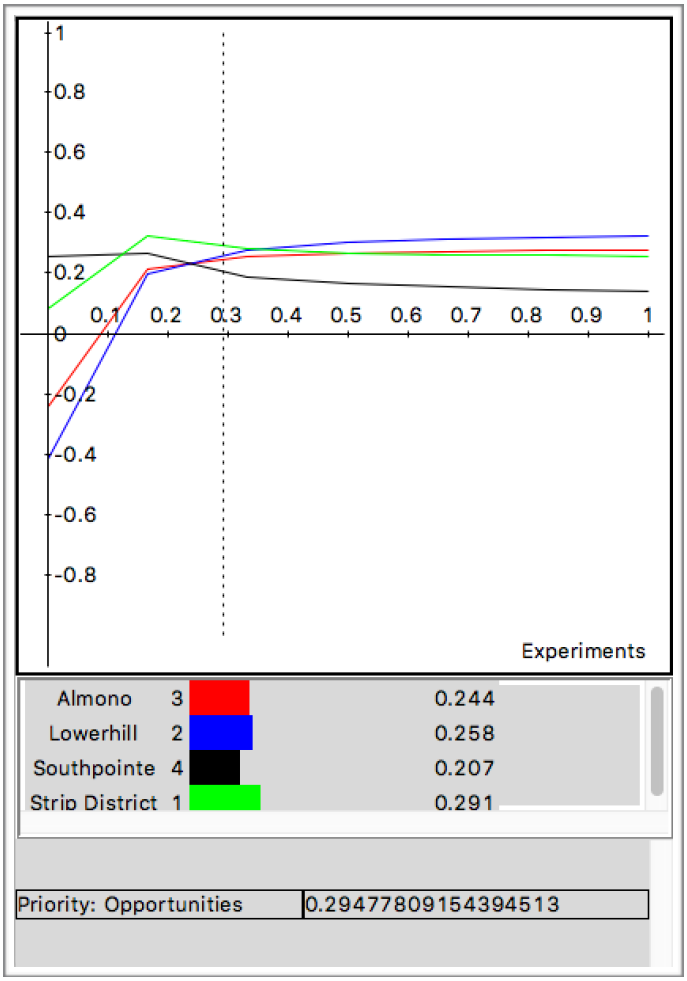
For the whole model synthesis, both the additive (negative) and multiplicative methods indicate that Southpointe is the preferred alternative. This was not the preferred alternative in the Benefits node; however, it scored the lowest in both costs and risks than either of the other alternatives. Lower Hill had the highest benefits and opportunities but also had the highest costs and risks. The final conclusion of the model then depends on the priority weighting of those four factors. Ultimately, we concluded that despite the long-term SuperDecisions results in favor of Southpointe — by 1.5%, we believe Apple will decide to build in the Strip District due to appeal to the desires of their millennial workforce.

Sensitivity Analyses

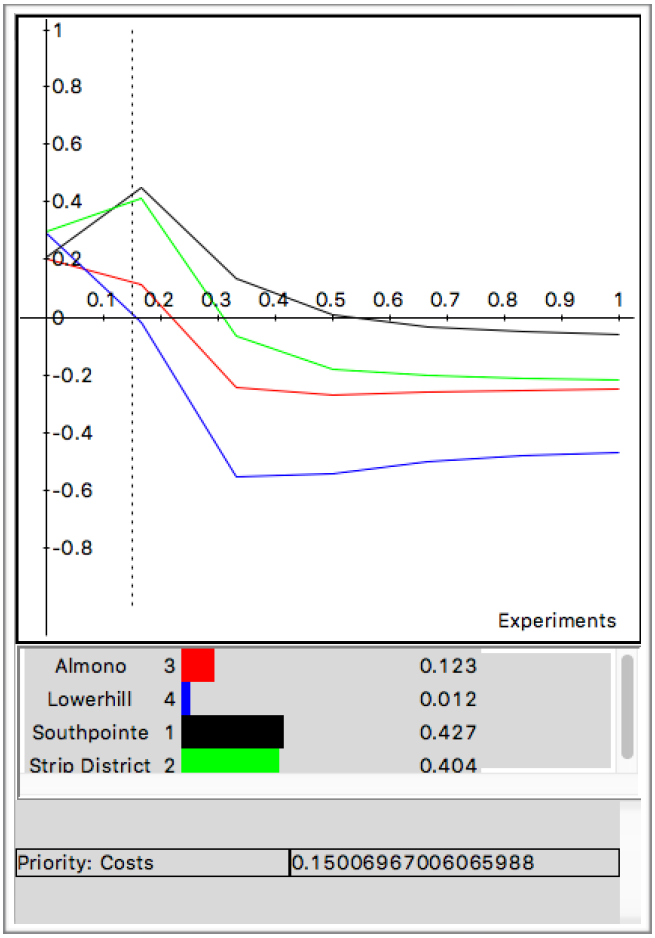
Benefits



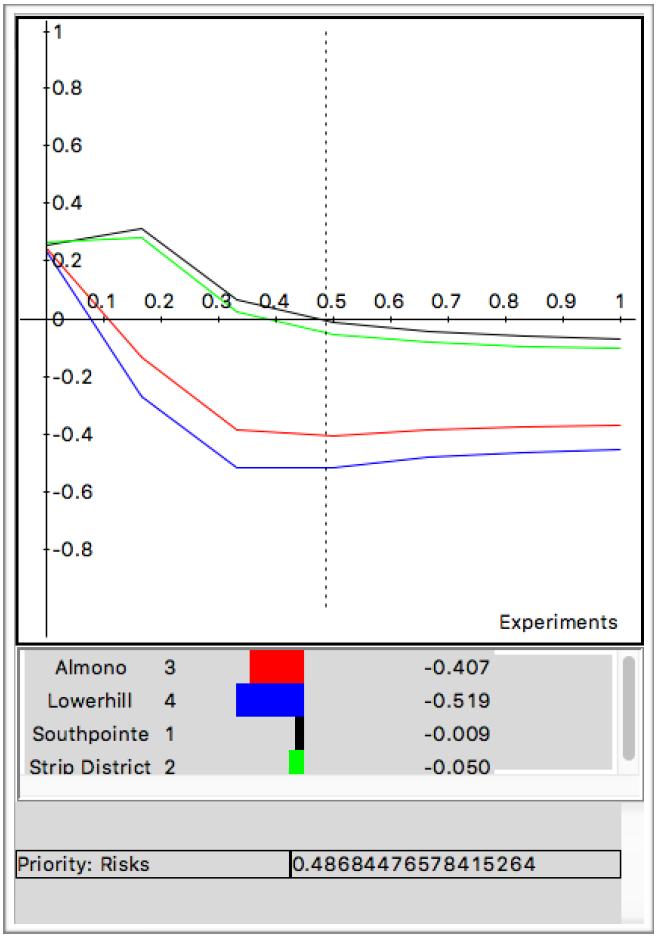
Opportunities



Costs



Risks



***** Note:** The site locations and the strategic and control criteria decisions were not based on hard, factual details (with the exception of the Strip District). They were mostly based on assumed priorities and values based on other Apple locations outside of their primary headquarters in Cupertino, CA. At the preparation of this report, Apple currently decided to lease 26,000 sq. ft in the Strip District, but the use of the site and number of employees has not yet been determined.

http://www.bizjournals.com/pittsburgh/blog/the-next-move/2015/06/sources-apple-to-take-bite-out-of-oxfords-three.html