

# LIFELight

Changing the world one bulb at a time



## Business Plan

*Abhijit Desai, Gareth Pilmoor, Jimit Shah, Nicolas Gauthier, Oyeniya Abidoye, Sanjay Subbarao*

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# Executive Summary

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## PROBLEM AND LIFELIGHT SOLUTION

LIFELight is a consumer-grade UV lighting technology company focused on improving public safety and convenience standards. Although many germicidal products and services are available in the market, COVID-19 pandemic demonstrated the lack of infrastructure necessary to mitigate transmission risks. LIFELight is a revolutionary way to increase real-time irradiation of airborne and surface-borne germs in any indoor setting in a safe and convenient way, with minimal installation costs.

LIFELight products are based on the same germicidal qualities of UV-C light discovered first in 1845 (Reed 2010). The common germicidal wavelength of 253.7nm (or 254nm) is 99.99% effective against bacteria and viruses including SARS and tuberculosis (Mackenzie 2020). However, the 253.7nm wavelength can penetrate the human body causing harmful effects, thus limiting its use to highly controlled environments such as hospital rooms, or embedded within closed HVAC equipment. In 2020, Dr. David Brenner and his team at Columbia University achieved a breakthrough. They demonstrated a Far UV light at 222nm wavelength is unable to penetrate the human body while providing the same germicidal qualities as the 254nm wavelength (Buonanno, M. et al. 2020). LIFELight is an application of that breakthrough, unleashing the potential for sanitizing light, everywhere, all the time.

## MANAGEMENT

LIFELight is a Delaware based LLC founded by Quantic alumni Nicolas Gauthier, Oyeniyi Abidoye, Sanjay Subbarao, Gareth Pilmoor, Abhijit Desai, and Jimit Shah. Our leadership team has a well-balanced experience including startups, building technologies, operations, supply chain, finance, and product development. We have retained the services of Dr. David Brenner<sup>1</sup> as our subject matter expert and technical advisor during the early developmental stages.

## MARKET

Starting with securing airports, our research found that billions of dollars are spent on

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<sup>1</sup> The contact's position at LIFELight is hypothetical and is made for academic purposes only.

lighting and sanitation products and services. Due to COVID-19, airports saw a 50-60% drop in traveler traffic. All airports use lights that can be upgraded to LIFELight lighting which provides safe germicidal qualities. The number of estimated replaceable tube lights at the Atlanta Airport is 13,000 (Nordstrom, 2015).

## COMPETITION

LIFELight has many advantages over competitors:

- **Traditional Sanitation Products or Services:** LIFELight products provide real-time and constant sanitation without the need to increase labor costs or add intrusive services like chemical fog or require users / clients to adopt invasive protocols.
- **UV Robots:** Robots are expensive and provide limited sanitation as they use 253.7nm wavelengths.
- **LED Lighting:** LIFELight products feature embedded LEDs so customers do not need extra fixtures to install LIFELight, an existing light fixture thus retains its lighting qualities while it gains sanitation properties.

There are always threats of new entrants if a business is successful. LIFELight's moats include strong IP strategy including patents, trademarks, and branding. Additionally, since LIFELight will be first to market with 222nm UV technology, we have a significant advantage to establish branding and win early market share.

## FINANCIAL SUMMARY

By the end of year 5, LIFELight expects to capture 5+ airports which equals over \$25M in potential revenues. LIFELight projects a net margin of approximately 18% which will continue to improve as unit cost drops with additional volume.

There are various expansion routes for LIFELight and are described in further detail in sections below.

## CAPITAL REQUIREMENTS

To kickstart operations and invest in the Intellectual Property, LIFELight company founders will fund the company with \$600,000 in Paid In Capital.

# Science Primer - Useful things to know

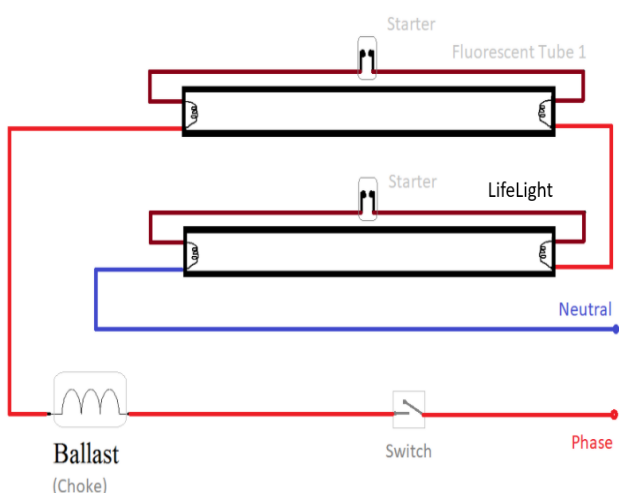
## UV-222nm sanitation 101

**What is it exactly?** - Simply put, Ultraviolet (UV) is a form of electromagnetic radiation. In day-to-day life, you may hear or read about it in context of its presence in sunrays, sunblock creams, UV filtered water etc. It is measured in wavelength and the unit of measure is “nm”.<sup>2</sup> Major types known are UVA, UVB and UVC. UVC: 200 to 280 nm, is called ‘germicidal’ radiation because of its ability to kill bacteria and inactivate viruses.<sup>3</sup>

**Why UVC-222nm?** - UVC radiation has been shown to destroy the outer protein coating of the viruses like SARS-Coronavirus. The destruction ultimately leads to inactivation of the virus. When harnessed and applied in the right amount in form of light source (207 to 222nm range), UVC is known to be an effective disinfectant for air, water, and nonporous surfaces without the potential for harmful impacts to the human body, as that specific wavelength is unable to penetrate it. This range holds promise to be developed as a safer avenue for its germicidal properties.<sup>4</sup>

**Why now? What’s so different, that wasn’t the case before?** - Quick answer, a wakeup call from COVID-19 pandemic and technological advancement. UVC radiation has effectively been used for decades as "germicidal" lamps. Applications include operation theatres and other healthcare facilities and most recently water treatment plants, meat shops etc. Technological advancement in lighting and UV harnessing, is improving the

efficacy of the application and making it more and more safe. All the current known germicidal lamps and solutions are known to be unique, very expensive and not compatible with current lighting infrastructure (bulb holders, fixtures etc.). LIFELight looks to solve this problem; utilize existing fixtures (figure 1.1 left) and give light a dual purpose: disinfect like a germicidal lamp and illuminate like a regular visible spectrum light.



<sup>2</sup><https://en.wikipedia.org/wiki/Ultraviolet#UVC>

<sup>3</sup><https://www.fda.gov/medical-devices/coronavirus-covid-19-and-medical-devices/uv-lights-and-lamps-ultraviolet-c-radiation-disinfection-and-coronavirus#coronavirus>

<sup>4</sup><https://www.icnirp.org/en/activities/news/news-article/sars-cov-2-and-uv-c-lamps.html>

# Company Description

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## BACKGROUND

In 2020, the entire world suffered the grievous impact of the COVID-19 pandemic. By the end of the year, over 120 million people contracted the virus and over 2.5 million people died<sup>5</sup>. Millions more had lost their jobs and the global GDP had contracted by 4.3% (World Bank 2021). While we are still reeling from the subsequent waves of the pandemic, we must face the elephant in the room: this will not be the last pandemic. The integrated global transport infrastructure will continue to enable emerging viruses to rapidly transcend national borders and risk overwhelming healthcare resources. We must prepare our infrastructure to contain, slow and limit, and where possible, prevent future global pandemic. LIFELight proposes to be part of this solution.

## MISSION

LIFELight seeks to provide a ubiquitous and pervasive method to passively and safely sanitize public and residential spaces, therefore breaking the transmission chain and mitigating risks of germicidal spread.

## VISION

LIFELight aspires to turn every single light source into a weapon in the fight against germicidal spread. The innovative dual-source LIFELight bulbs and fluorescent tubes enable existing fixtures to shine both the visible light they were designed to provide and an additional invisible 222 nm far-UV light which efficiently kills pathogens in air and on surfaces without harm to exposed human tissue. While sanitation by UV light is common practice in hospitals and other high-risk environments, the 254nm wavelengths that are used in this process are damaging to humans and can only be used in unoccupied rooms by temporarily deploying special light sources. LIFELight is the first company to offer a bulb which combines a safe-for-humans virus-killing wavelength and combines it with a normal light source, allowing for constant sanitation of air and surfaces, even in occupied rooms, and using existing infrastructure. Along with existing public health measures, LIFELight will reduce humanity's vulnerability to viruses and other pathogens. By implementing the LIFELight technology on a large scale, it will become possible to passively counter viral threats even before we become aware of them.

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<sup>5</sup><https://covid19.who.int/>

## VALUES

LIFELight's company values have three core components:

**Ubiquity:** LIFELight can save lives: its products must be priced, manufactured and distributed in such a way that every light source is eventually replaced by a LIFELight.

**Safety:** Solving a problem should not create a problem: all LIFELight products must be fully and independently tested to ensure they are safe for use.

**Simplicity:** LIFELight should seamlessly replace existing bulbs or tubes: no difference in light output and quality, no difference in fixture specifications.

## OBJECTIVES

By the end of Year 1, we will have finalized R&D, secured a patent, confirmed efficacy and safety through independent testing and established manufacturing arrangements. By the end of year 2, production will allow for equipping a major node of the US air transit infrastructure, a vulnerable element in the viral containment strategy. By the end of year 3, production must be able to scale up to allow for wider implementation, starting with air transit hubs but reaching into every public space, and eventually growing to sanitizing lights to the residential and personal markets.<sup>6</sup>

## PARTNERS

In accordance with our values, the LIFELight team will seek key industry allies to allow for mass production and enable global adoption. While they are being born as an emergent technology, the dual-source LIFELight bulbs and tubes must quickly become mainstream and volumes of production could be accommodated by partnering with industry giants who have the manufacturing infrastructure to manage such volumes.

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<sup>6</sup><https://www.openpr.com/news/2217818/lighting-as-a-service-market-next-big-thing-major-giants-philips>



# Management Summary

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## OUR ORGANIZATION

LIFELight is a limited liability company (LLC) legally incorporated in Delaware, USA. Structured to maximize innovation, it is a flat organization, enabling independent, but mutually supportive actions.

Our organizational structure is comprised of three teams:

1. R&D (including engineering and product development),
2. Marketing & Sales, and
3. Business Operations

Each team has the independence to pursue their objectives specific to each phase of the operations plan, but work closely with the other teams to ensure synergy and unity of purpose.

Teams are led by founders, whose strong belief in the potential LIFELight idea, and their equity in the company, motivate them to deliver on their objectives.

The key asset of LIFELight is its intellectual property, the dual-source light technology, and the associated strength of its LIFELight and SafeLit branding. As a virtual company, LIFELight holds minimal physical assets. The manufacturing and shipping of products are executed by third party suppliers under close supervision of the LIFELight Operations team. Overhead costs are kept low as teams work from home and use remote-work technologies to collaborate and synchronize their efforts. Prospective clients are visited at their own offices by the Sales and Marketing team, and key suppliers' sites are visited and inspected by the Operations team.

Both the flat organizational structure and the minimalist infrastructure of the virtual company contribute to the core values of LIFELight. Like its products, the dual-source sanitizing lights, the company is both everywhere and nowhere, providing benefits without being noticed, working to protect people from disease without impacting their lives. Innovative, discreet, and world-changing. One bulb at a time, until all light is a LIFELight.

## OUR TEAM

**Jimit Shah** (CEO) Jimit has experience starting and scaling cutting edge hardware and software technology companies serving commercial real estate facilities. He has helped raise \$35M in venture and strategic funding from leading venture capitalists and corporate VCs. He is a mission driven leader that believes in creating unparalleled value for all stakeholders. Combined with his ability to bring together the brightest and diverse minds, he will ensure LIFELight will lead the consumer-grade UV space through innovation and education.

**Nicolas Gauthier** (COO): Nicolas served as a senior military officer for over 20 years and advised a number of governments on risk management strategies. As a crisis management expert, he has been instrumental in developing and implementing policies for viral risk reduction based on practical solutions with real impact on day-to-day operations. He has supervised numerous multidisciplinary teams and delivered mission success in high-risk situations. Recognized as an innovator, and familiar with governmental decision-making, his experience and network will help establish LIFELight as a trustworthy and mission-focused company that is in service of the greater good.

**Oyeniya Abidoye** (CFO) is a Banker, Project manager and a System Analyst. He has over 14 years of experience working in the Banking Industry. He is a certified project manager with the Project Management Institute (PMI) and has led many successful project teams. Some of his project engagements have focused on product launch, merger and acquisitions (M&A), systems upgrade and process improvement. He is poised to ensure that LIFELight projects are delivered within allocated budget and time.

**Gareth Pilmoor** (Business Development Director), Sales Engineer. Gareth has extensive experience in the Construction Building Service industry working in Research, Consulting and most recently over the past 10 years in Product sales. Experience includes marketing, positioning and driving specifications through to product and system sales. Most recent role include positioning new Scandinavian cooling technology into office projects in London. This role involved multistage consultative sale of customer tailored products over typical time frames of 2-3 years. Gareth is positioned to develop excellent relationships with LIFELight's customer base to ensure we clearly listen to their needs and provide a product offering that can be well integrated into their risk viral reduction strategies.

**Sanjay Subbarao** (Director - Product Management) has worked as a Product Engineer and a System Integrator. He has over 6 years' experience working in cross functional teams

and shipping out products. He has experience working on connectivity products and in a high paced environment. Some of his project engagements focused on Product launch, Process improvement and Feedback based incremental improvements. He is poised to ensure that LIFELight's products are integrated to fit the size and scale. He would also work in partner engagement and improve CRM based sales.

**Abhijit Desai** (Director - Program Management), has over 17 years of diverse experience in Operations, Program Management, Purchasing and Supply Chain. He has successfully launched several programs ensuring to exceed time, cost and quality objectives. An astute problem solver and a keen eye for every detail, he ensures that his team is always on top of their goals and leads them from the front. His passionate involvement in every aspect of the project delivery, would ensure that various phases of LIFELight product launch will stay the course and maximize value for all customers and stakeholders alike.

## **SKILLS CONCERNS**

Our core team of founding members is well-balanced and has the expertise it needs to lead its three core teams, with experienced engineers, sales representative, financiers and operations specialists, but lacked the in-depth scientific and academic foundation required to leverage the emergent science of far-UV light and to transfers it to an applicable technology. This scientific expertise shortfall has been mitigated by our association with Dr Brenner as our Scientific Advisor.

**Dr. David Brenner<sup>7</sup>** (Scientific Advisor) Dr. Brenner is the director of the Center for Radiological Research<sup>8</sup> at Columbia University and a leading researcher of the beneficial effects of the Ultraviolet C (UVC) light. His recent work on the benefits and safety of the far-Ultraviolet light (207-222nm), specifically 222nm wavelength, has been published and quoted by the top science magazines, universities, and professionals.

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<sup>7</sup> The contact's position at LIFELight is hypothetical and is made for academic purposes only.

<sup>8</sup> <http://www.columbia.edu/~djb3/>

# Industry Background

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## INDUSTRY OUTLOOK

Even prior to the COVID-19 pandemic the global antiseptics and disinfectants market size was valued at USD 16.75 billion (2018) and was expected to expand at a Compounded Annual Growth Rate (CAGR) of 6.7%. The dramatic demand in sanitizing solutions in 2020 resulted in shortages as businesses and individuals alike struggled to protect their community from infections and to maintain normal activity under new constraints. Given what we know now, it is reasonable to expect that growth will significantly exceed pre-pandemic predictions. The sanitation industry can be segmented into several broad categories, along several axes and sectors. Most significant is the professional grade solutions leveraged in high-risk environments, such as hospitals, and the simple, consumer grade, day-to-day solutions for residential and commercial use. UV-based sanitation is a mainstay of professional sanitation with high-cost of acquisition balanced by high efficacy when employed according to strict protocols. LIFELight will create a new niche by bringing UV sanitation to the realm of the consumer-grade solutions. The LIFELight offer, whilst primarily a sanitizing solution, represents a new approach which supplements existing offers and provides a new solution which intersects with the global lighting market, itself valued at about USD 106 billion in 2020 and expected to grow at a CAGR of 5.5%. If priced adequately and manufactured in scale, LIFELight products will capture a portion of both the global lighting market and the sanitation market.<sup>9 10</sup>

## COMPETITION

The consumer-grade sanitation industry is moderately competitive. Low-tech solutions compete over price with most products relying on simple chemicals, mostly ethanol being delivered manually to the area requiring sanitation. High tech solutions such as germicidal lighting, misting and automated systems, and professional sanitation products are typically higher cost and highly regulated. In both sectors, certain brands have established themselves as a household name and become a product reference, such as Purell in the consumer grade sanitation sector. Interestingly, public health authorities tend to

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<sup>9</sup><https://www.grandviewresearch.com/industry-analysis/antiseptics-and-disinfectants-market>

<sup>10</sup>[https://www.expertmarketresearch.com/reports/lighting-](https://www.expertmarketresearch.com/reports/lighting-market#:~:text=The%20global%20lighting%20market%20is%20being%20driven%20by,%28LED%29%20has%20significantly%20contributed%20to%20the%20industry%20growth.)

[market#:~:text=The%20global%20lighting%20market%20is%20being%20driven%20by,%28LED%29%20has%20significantly%20contributed%20to%20the%20industry%20growth.](https://www.expertmarketresearch.com/reports/lighting-market#:~:text=The%20global%20lighting%20market%20is%20being%20driven%20by,%28LED%29%20has%20significantly%20contributed%20to%20the%20industry%20growth.)

recommend that a number of sanitation approaches be “layered” to achieve increased levels of germicidal and viral protection, as such companies that propose differing sanitizing solutions are not in direct competition and tend to mutually benefit from increased awareness and demand. LIFELight brings a new solution to the consumer grade sanitation market and would benefit from awareness created by other companies within the industry, with whom a symbiotic relationship can likely be achieved. Cost of acquisition is the main differentiating factor between the consumer-grade and professional-grade sanitation markets. In order for LIFELight products to be successful, they must, therefore, be sufficiently low-cost to be affordable at scale and roughly within the order of magnitude of similar non-sanitizing light bulbs or fluorescent tubes. As such, LIFELight bulbs and tubes compete more against lighting solutions than with other consumer grade sanitizing solutions or professional grade UV sanitation lights.

## **BARRIERS TO ENTRY**

There are three main barriers to entry at the junction of the sanitation and lighting industries:

**High cost of manufacturing at scale:** Automated and semi-autonomous industrial facilities are required for mass producing bulbs and tubes in sufficient volume to allow for economies of scale and competitive product pricing. It is not the LIFELight intent to seek to build or acquire these types of facilities. A B2B partnership with a well-established lighting industry manufacturer will overcome this barrier, by enabling our partner to gain a significant edge against its competitors by the addition of a sanitation benefit to their lighting systems.

**Highly regulated frame around professional sanitation.** The professional sanitation market, centering on hospitals, literally deals in life-and-death scenarios and the associated legal responsibilities demand that products and procedures used for sanitation to be highly tested with guaranteed high efficacy. By targeting the consumer grade sanitation market, LIFELight can avoid those extreme regulatory requirements because its sanitation effect will come in addition to current consumer grade sanitation solutions and provide a hitherto inexistent layer to add to its customer sanitation strategy.

**High cost of conversion to new lighting systems.** Most companies offering UV-light sanitation have targeted the professional market with high-cost specialized systems, and even the few companies who have attempted to bring UV sanitation to the consumer grade residential sanitation market have done so by developing unique lamps or fixtures,

forcing clients to absorb significant installation and redesign costs. LIFELight will make sure its products meet extent lighting industry specification standards of fixture compatibility (UL<sup>11</sup> / CSA<sup>12</sup> / OSHA<sup>13</sup>) and provide visible light within ASHRAE<sup>14</sup> requirements. Its unique double-source design practically eliminates conversion costs: implementing LIFELight is literally as simple as changing a light bulb, with all the advantages of UV-light sanitation.

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<sup>11</sup><https://www.ul.com/about>

<sup>12</sup><https://csa.fmcsa.dot.gov/>

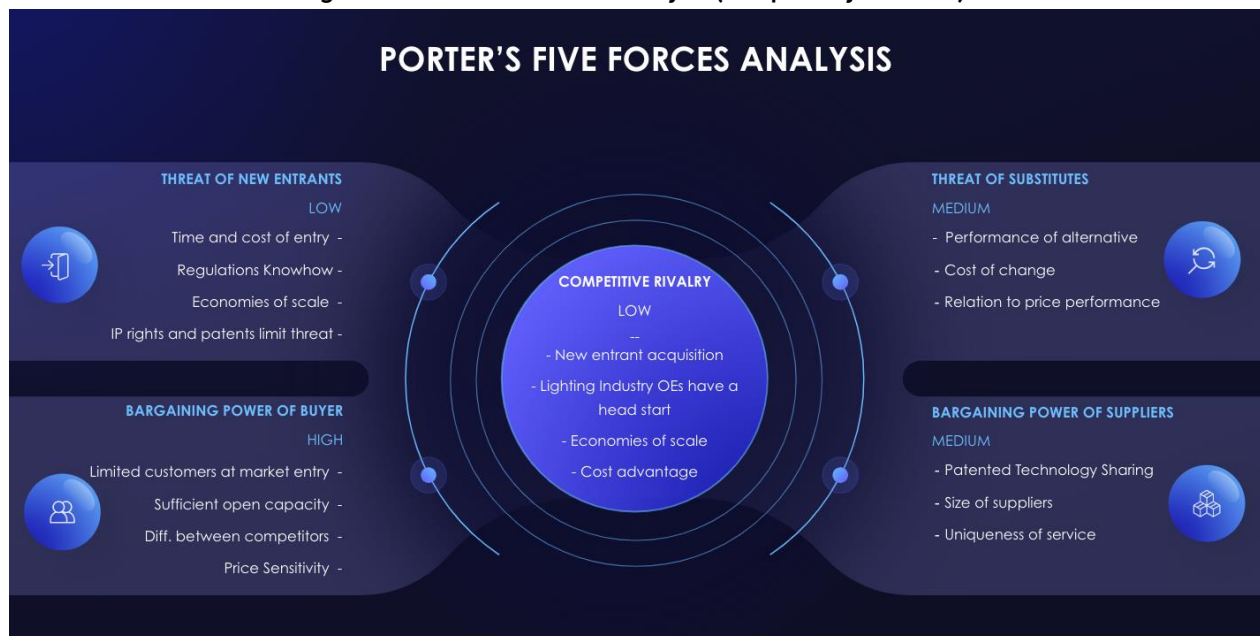
<sup>13</sup><https://www.osha.gov/>

<sup>14</sup><https://www.ashrae.org/>

# Competitive Analysis

Applying Porter's Five Forces, low to moderate risk is anticipated from competitive forces at play. Refer Fig 1.2, below.

Fig 1.2 -- Porter's Five Forces Analysis (Template by YouExec)



In Summary, risk assessment is as below:

Description	Level of risk
Threat of New Entrants	Low
Bargaining Power of Buyer	High
Competitive Rivalry	Low
Threat of substitute	Medium
Bargaining Power of Suppliers	Medium

Below is a list of products and companies LIFELight expects to compete with in the market.

## LIGHTING PRODUCTS

**Signify (formally known as Philips lighting):** One of the world's most trusted lighting brands. Since 1891, Philips has been synonymous with high-quality, reliable, innovative technology that improves people's lives.<sup>15</sup> Their revenue in 2019 was reported as 19.48 billion EUR.<sup>16</sup> Philips has developed a broad range of effective UV-C lamps, luminaires, devices, control systems and services already, however these are extremely customized solutions.<sup>17</sup>

**GE Current:** A Daintree company, is a design, source, and assemble, lamp and lighting fixture business focused on retrofit applications that pull through complementary controls and software. In their first year, the company recorded over USD 1 billion in revenue.<sup>18</sup> Company has developed an LED puck-style ceiling-mounted light in the new 365DisInFx brand (LPU Series) deactivates pathogens such as SARS-CoV-2 with ultraviolet (UV-C) irradiation (Wright 2020). Solution appears to be very customized and limits the field of application, given the product size and capability.

There are other companies such as Sylvania and Osram who have also developed similar product lines. There is also heightened interest in Christie's Care 222.

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<sup>15</sup><https://www.usa.lighting.philips.com/about-us>

<sup>16</sup><https://en.wikipedia.org/wiki/Philips>

<sup>17</sup><https://www.lighting.philips.com/main/products/uv-disinfection>

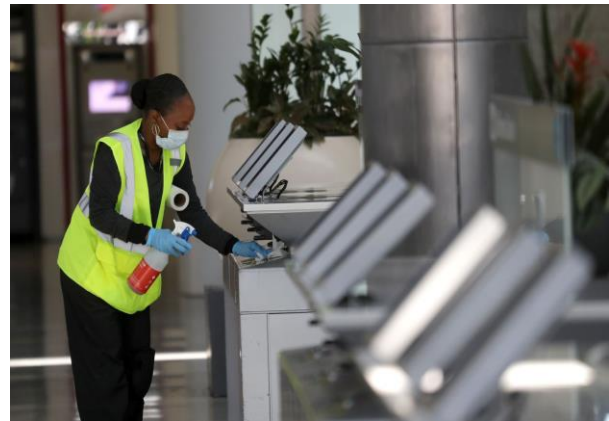
<sup>18</sup>[www.gecurrent.com](http://www.gecurrent.com)



## TYPICAL DISINFECTANTS

Airports, like most other commercial facilities, use traditional disinfectants like liquids and sprays. This approach provides detailed cleaning of hard-to-reach areas; however, constant manual cleaning can be costly, intrusive, labor intensive and disruptive.

Sanitation professional using typical spray disinfectant



Source: <https://www.bostonglobe.com/2020/05/07/lifestyle/how-airlines-are-cleaning-planes/>

Sanitation professional using a chemical fog machine.



Source: <https://www.bbc.co.uk/news/uk-scotland-scotland-business-52577705>

## FOGGING MACHINES

An increase in germicidal fogging was noticed at airports during COVID-19. This approach can cost up to \$0.50 per sq. ft. which can prove costly for recurring services. Additionally, spraying chemicals in the air is intrusive and can be an unpleasant experience for travelers.

## UV ROBOTS

A new ultraviolet based robot was introduced at the Pittsburgh International Airport, as a response to COVID-19. Such robots can range from \$40,000 - \$60,000 (Kahn 2020) and are a bulky interruption to travelers' pathways. Moreover, these robots feature 253.7nm UV light and cannot provide protection to any areas exposed to human skin or eyes.

254nm UV sanitizing robot (floors only)

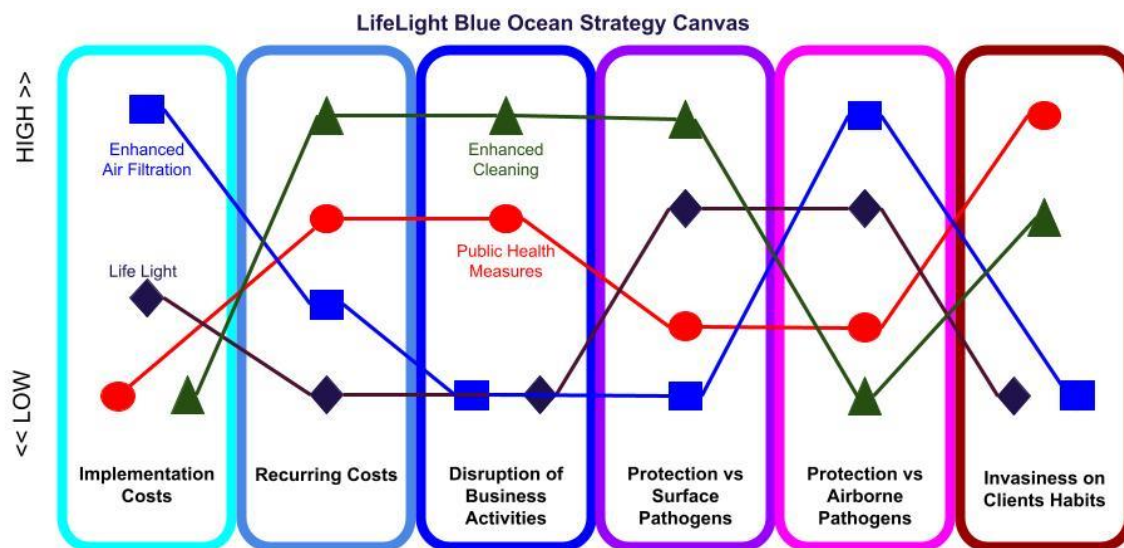


Source: <https://www.post-gazette.com/business/development/2020/05/05/Pittsburgh-International-Airport-COVID-19-Carnegie-Robotics/stories/202005050120>

## LIFELIGHT ADVANTAGE: A BLUE OCEAN STRATEGY

LIFELight is the sole sanitation approach which targets both airborne and surface-borne pathogens without disrupting activities or requiring participation from clients. It can be installed easily and cheaply. LIFELight provides real-time protection by inactivating harmful germs in mid-air without the need to spend on recurring services.

LIFELight solution ensures customer safety and convenience. Given the major decline in the travel industry, it is important now, more than ever before, to improve traveler confidence. LIFELight's products and branding solutions provide just that. Airports can expect an increase in revenues and customer safety, as a result.



For reference, below are lists of competing market solutions and factors listed in the Blue Ocean Strategy Canvas above:

### Market Solutions:

- Enhanced Air Filtration
- LIFELight
- Public Health Measures
- Enhanced Cleaning

### Key Factors:

- Implementation Costs
- Recurring Costs
- Disruption of Business Activities
- Protection versus Surface Pathogens
- Protection versus Airborne Pathogens
- Invasiveness on Clients Habits

# Market Analysis

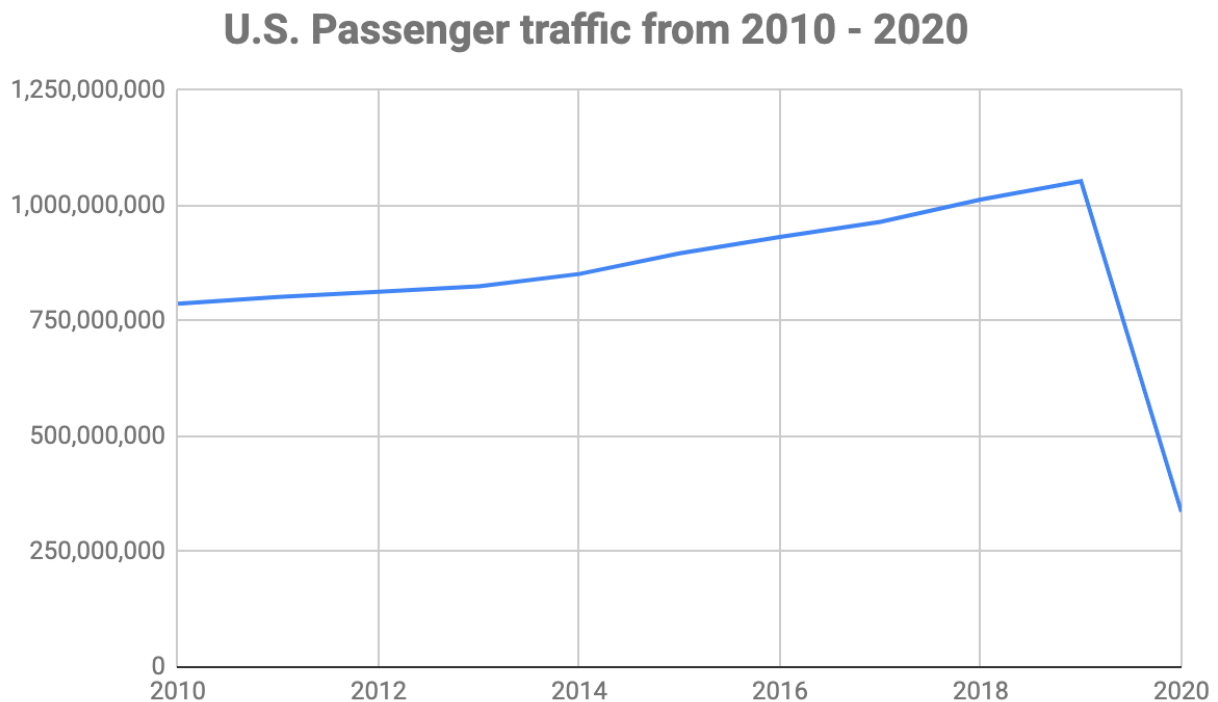
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## MARKET SIZE

Our target clients include the purchasing managers of commercially managed spaces with high concentration of human activity. These can be further classified into:

1. Indoor and transient: airports, malls, cruises, building lobbies and elevators
2. Indoor and non-transient: residential buildings, warehouses, data centers
3. Outdoor and transient: parks, city downtowns
4. Outdoor and non-transient: suburban roads

To start, LIFELight will focus on indoor and transient spaces of major airports, as they provide critical infrastructure used by approximately 2.9M daily passengers across 19,000+ big and small airports in the United States<sup>19</sup>. The chart below shows the consistent growth in passenger traffic pre-COVID-19 and a sharp decline in 2020.



(Source: data acquired from the Bureau of Transportation Services)<sup>20</sup>

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<sup>19</sup> [https://www.faa.gov/air\\_traffic/by\\_the\\_numbers/](https://www.faa.gov/air_traffic/by_the_numbers/)

<sup>20</sup> [https://www.transtats.bts.gov/Data\\_Elements.aspx?Data=1](https://www.transtats.bts.gov/Data_Elements.aspx?Data=1)

## **TARGET MARKET**

Typically, 100s of millions of people walk through the common areas on an annual basis<sup>21</sup>Given the high volume of travelers, it is critical for airport facilities to continuously sanitize common areas including walkways, waiting areas, and restrooms. The COVID-19 pandemic has raised traveler concerns and safety regulations resulting in higher labor and material cost. Their top critical needs and characteristics include:

### **Passenger & Staff safety**

As any other business, airports need to mitigate health safety risks for their passengers and employees. Airports are highly transient in nature with travelers from many different places crossing paths. This makes airports one of the most vulnerable places for germs and can be catalysts for spread. LIFElight kills 99.99% of surface germs that can be exposed to light without harming humans (and other animals).

### **Cost Sensitivity**

Declining revenues due to COVID-19 have added significant financial stress for airports, demanding more efficiency in operations and maintenance. Purchasing department has to be more judicious about managing costs than ever before while having to spend more on cleaning supplies and services. LIFElight minimizes the cost of extra cleaning supplies and janitorial services. New federal and state grants are available to support airport cleaning and sanitizing products and services.

### **Regulatory compliance**

Airports must meet many state and federal laws. LIFElight will ensure to meet all necessary regulations.

## **PEST ANALYSIS**

**Political:** Factors concerning government regulation will be handled by LIFElight to ensure that we meet the requirements.

**Economic:** Considering the fact that this would be investment coming from the Airline industry, our goal is to ensure profitability and scale to avoid compromising their purchasing power.

**Social:** The importance of sanitation for ensuring the demand for travel is going to drive this and ensure the fact that we will have consumers for the same.

**Technological:** The technology for LIFElight is still in its infancy and we intend to obtain patents to ensure avoidance of infringement and continued monitoring of the same.

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<sup>21</sup> <https://www.bts.gov/airport-rankings-2019>

# Marketing Plan

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At LIFELight we provide light bulbs and tubes that emit UVC 222nm in addition to conventional matching visible light spectrums to deliver travelers at airports in the USA with secure coverage and cost-effective protection against COVID-19 infection.

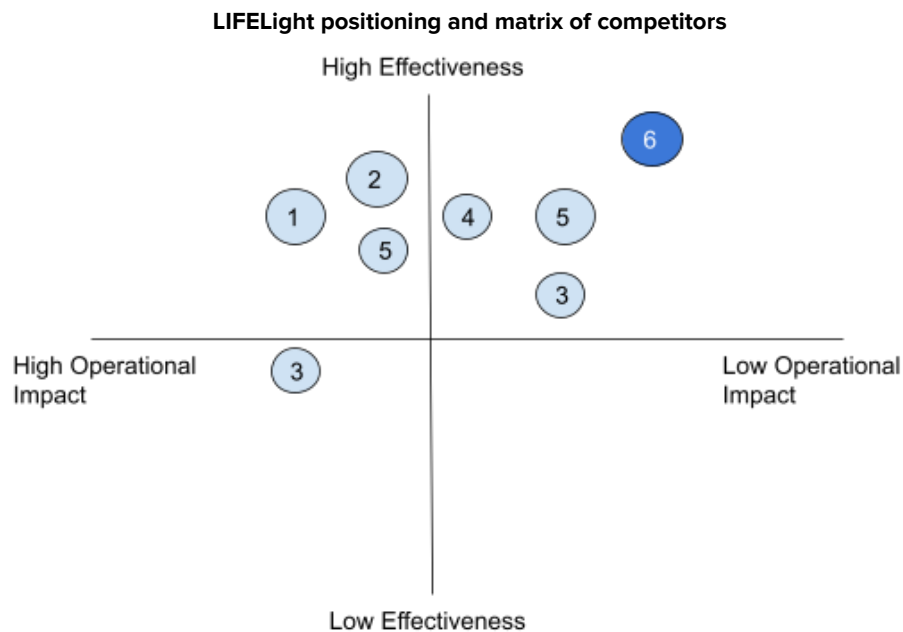
## **UNIQUE SELLING PROPOSITION**

LIFELight is a means to providing airport users with greater security and reduced risk of contracting viral infections such as COVID-19. LIFELight proposes that airport operators can simply achieve this by appointing teams to replace existing light bulbs and tubes with LIFELight. LIFELight provides the airport with support in informing the passengers that the spaces are constantly being sanitized and not just sanitized directly after a cleaning operation. Supported by our branding, airport operators can reassure travelers with the confidence that they are providing the most comprehensive protection for viral infection within the airport space, thus increasing traffic and revenue.

## **POSITIONING**

LIFELight enables airport operators to create safe public transit space at the flick of a switch. Unlike professional cleaning products and cleaning, LIFELight is unintrusive, safe, instant and provides constant protection.

The strategic map below shows competitive costs of disruption to Airport and reduced travelers generally greatly exceed capital outlay for implementation mitigating measures it is clear this as the driving factor when considering implementation of risk reduction measures.



1. Cleaning products - hand sanitation stations
2. Screening product - protective screens and check in, food services and security
3. Signage and instructions - information to wear masks and stay 2m separate
4. Enhanced surface cleaning - cleaning service increased in critical areas
5. Deep cleaning protocols: fogging etc. - deep cleaning services available to sanitize spaces
6. LIFELight

### **Viral Infection - Risk Reduction Solutions**

LIFELight technology is ideally positioned initially for environments where there is high risk of the spread of viral infection both impacting the individuals involved and the broader society in the communities they travel to. LIFELight will position the technology, first, to those areas where improving safety can save the most lives and help vital transport links to operate safely. Airports already have many measures in place to reduce COVID-19 risk including frequent cleaning, masks, protective screens, hand sanitizer stations, marked safe distance for queuing and digital instruction information screens. With LIFELight, airports can expect their customers to feel safer and travel with confidence.

### **Primary Strategy - Technological Leadership**

LIFELight's strategy is to utilize the positioning of our technology in airports to provide greater public awareness of the benefits of sanitation protection our technology has and in doing so provides a launch pad for the high-tech UV light sanitation technology into the

mass lighting markets. General public awareness of the security and protection in particular areas of the airport is the foundation for employment of LIFELight's second strategy.

### **Secondary Strategy - Skimming**

LIFELight envisages that increased customer awareness will drive the demand for UV light protection in all high traffic areas of the airport, including duty-free shops and food courts. LIFELight strategy is to drive profitability and sales as LIFELight extends its range of light fittings for the deployment of LIFELight's to the broader lighting market. One tactic to achieve this would be to give airport retailers the opportunity to extend the protection measures for customers to their duty-free stores. Duty free stores globally have an estimated market value in 2019 of 84 billion dollars. Reduced footfall due to the risk of viral infection will be improved with the introduction of LIFELight's protective technology providing protection to customers to the duty-free market.

**Duty free store at an airport**



Source: <https://www.internationalairportreview.com/news/133494/aci-policy-brief-crucial-role-duty-free-retail/>

To reach a broader market in a sustainable way, LIFELight plans to partner and train professional lighting installers. LIFELight-safe installers will be competent in the benefits and application of the light fittings to ensure the application can provide the assurance that there is very low risk of contracting infection from merchandise that customers touch or consume. Deeper commercial relationships with contractors also enables LIFELight's expansion into other markets by offering contractors shared revenue as distribution partners or Value Added Resellers (VARs).



### **Final Strategy - price leadership**

Once the products are broadly accepted and adopted in the transit area and in retail stores, LIFELight aims to fulfill our mission and make our bulb technology available to other businesses and directly to consumers. LIFELight will scale its supply operations through partnerships with licensed manufactures and alliances.

### **PRICING STRATEGY**

- Early Adopters (Airport Innovation Program): 150 - 200 USD per fitting is the target introduction pricing. At this price point, LIFELight is expected to sell as a premium lighting brand, but competitive enough with traditional lighting.
- Airports and Premium retail spaces: Target 90 - 120 USD per fitting in 2023. With growth in volume, additional savings from bulk manufacturing can be passed on to the end customers.
- General mass market: Target 30 - 50 USD per fitting in 2024 to compete against ordinary LED light bulbs at restaurants, mom and pop retail, and commercial and institutional buildings.

### **DISTRIBUTION**

In the first phase, LIFELight technology will be sold consultatively by the LIFELight sales team as a solution to reduce cleaning requirements, mitigate risk and reassure customers that the airport is utilizing cutting edge technology to keep everyone safe. The purpose of this phase is to set up the lighting replacement project plans with agreements in principle with airport stakeholders and define the priority light fittings to be developed and manufactured first.

Once LIFELight moves from prototypes to manufacturing stages, LIFELight will distribute our products through approved fitting companies that focus on servicing airports. We envision further expansions through agents and retailers as the production levels increase and the technology becomes more widely available.

Initially LIFELight is sold to airport projects as the latest innovation in providing protection to airport travelers and staff where careful consideration is made to ensure appropriate



professional application. This positions the brand as not only innovative but a premium method of protection in high quality lighting systems.

The premium positioning of the brand is then utilized to attract other customers including airport duty free retailers and then retailers in general via the network effect of more retailers wanting to deliver same protection coverage benefits for their customers.

LIFELight brand is associated with safety and revolution in making lighting a means of viral protection everywhere.

## **PROMOTIONAL STRATEGY**

LIFELight's products provide invisible protection all the time and therefore we support our customers with comprehensive marketing materials to provide awareness of the benefit and protection their customers are receiving.

LIFELight's strategy is to first engage airport stakeholders via the scientific public health benefits through press articles and published academic journals referenced in client tailored presentations. LIFELight's objective is for airport stakeholders to embrace the innovative technology and partner with airports to educate travelers via digital and physical signage. Signage will include facts about the level of protection received and safe zones that have exceptional coverage.

LIFELight will also have a website address marketed on the digital boards so that curious travelers can find out more about the technology and make enquiries to order a LIFELight solution for their premise.

Over time the brand will become well known with seasoned travelers and the duty-free shops will also have the opportunity to provide coverage for their customers not only while they are shopping at the airport but in the high street. LIFELight intends to assist retailers with communicating the safety benefits by displaying appropriate signage on their shop windows or digital marketing messages on their instore screens.

LIFELight sees brand awareness as an integral part of our marketing strategy and we will budget for specialist branding and marketing services to ensure LIFELight is synonymous with Safety in the eyes of the general public.

Example of a SAFELight signage

**This area is SAFELit™**



# Operations Plan

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LIFELight's operational activities will change as the company matures. This evolution can be broken down into four main phases.

## I - PREMARKET PHASE

During this phase, the core team will use initial funding to set the conditions for future return on investment when market-ready. No income is projected during this phase, which is expected to take less than 1 year. During this period, work will focus on three parallel lines of operations:

**Product Development** - The R&D team, working with our scientific advisor, will focus on the finalization of a functioning dual-light tube prototype, the protection of LIFELight intellectual property under patent, and the conduct of efficacy and safety testing. Its work will culminate with a manufacture-ready design.

**Brand Building** - The Marketing and Sales team will focus on a multimedia public awareness campaign, explaining the properties and characteristics of Far-UV light and associating it firmly with the LIFELight symbology, its marks and branded-content. As described in the marketing plan, this will be a critical aspect of LIFELight's future success.

**Production & Logistics Networking** - There exists a number of manufacturing suppliers with the capabilities to build and assemble small-batch electronic components along provided designs. These supplies can produce our design on-demand for a reasonable cost, particularly in Mexico and China. Through industry trade shows, the direct liaison and specialized business intermediaries, the Operations team will explore business relationships and possible contractual terms with potential manufacturing suppliers to ensure that when a manufacture-ready design is finalized, it can be produced at quantity, at an agreed upon price and within defined timelines. Similarly, global multi-modal transport companies are quite numerous and offers vary, the operations team negotiate arrangements to accurately predict transit times and costs from the manufacturing site, likely in Mexico and China, to the client's site, likely in the continental US. Reducing the variables associated with production costs and outbound logistics will be essential for success in the early market phase. It is expected that the full complement of LIFELight dual-light tubes required to implement the system in a typical airport will number approximately

13,000 tubes, which accounting for protective shipping material, should fit in a typical 40' multimodal shipping container unit, keeping outbound logistics cost minimal.

## **II - EARLY MARKET PHASE**

With LIFELight's ready to be produced, the core team will now launch it with a showcase airport to demonstrate capability and benefit in a real-life scenario, this will serve both as a proof of concept and a marketing testimonial. This phase should be largely cost-neutral and take no more than 6 months to complete. During this period, work will focus on three parallel lines of operations:

**Technical Sales** - Client acquisition will be the focus of this phase, with selecting and attracting the appropriate Airport as our product launch. Leveraging the innovation program of the target airport, the sales team will secure a deposit payment from the client to cover initial production and shipping costs, as determined by the Operations team in the earlier phase.

**On-demand Production & Logistics** - Enacting the contracts negotiated in the previous phase, the number of dual-light tubes required for fully outfitting the showcase airport will be ordered, produced and shipped by contracted third-parties, synchronized and supervised by the LIFELight operations team. On-demand production will keep overheads, inventory and warehousing costs low, even if production costs are not minimized by large scale production.

**Public Impact Campaign** - Sanitation, especially innovative sanitation approaches like LIFELight, is not only about reducing risk of pathogen transmission, it is also about increasing public trust. Capitalizing on the awareness and branding built in Phase I, the marketing team will showcase the first airport's benefit both to users and other airports. This will see a strong brand presence within the airport itself and an external exploitation though both new and traditional media.

## **III - STEADY-STATE MARKET PHASE**

Having been implemented in a showcase airport, LIFELight will approach other airport management companies with a growing pool of hard data and testimonials in hand. The model will otherwise remain largely unchanged: focus will be on the sales team, with each new client triggering third-party manufacture and shipping, and further marketing exploitation of each airport client. This is when initial investment expanded in Phase I will

be recouped over each successive order, and funding will be accumulated to enable the subsequent phases. This phase could last from 6 months to 3 years, depending on global context and continued public-focus on disease prevention.

#### **IV - EXPANSION MARKET PHASE AND POSSIBLE EXIT WINDOW**

**Brand Expansion** - Once brand recognition of LIFELight is strong, the conditions will have been met to diversify the technology and the offering beyond the airport niche. Leveraging the awareness and trust associated with LIFELight branding, and the dual-light technology intellectual property, the marketing team will pitch its product family to the industrial, commercial and personal sectors to create demand.

**Exponential Production and Logistics** - It is likely that expansions into new sectors will create a situation where third-party production and outbound logistics are no longer optimal, and direct distribution is no longer possible.

**Exit or Expansion** - The LIFELight team will now have to decide how to stage its expansion or exit. Its main assets will be its brand and its technology IP, which offer numerous options for Phase IV strategic directions:

(1) Backward vertical integration - LIFELight can consider acquiring its own production facilities and shipping infrastructure to meet demand and allow for wide distribution through appropriate intermediaries (wholesalers);

(2) Licensing - LIFELight can license its technology and brand to one or a number of mass manufacturer of lighting solutions, with their own integrated or external distribution channels;

(3) Exit Strategy - Alternatively, LIFELight could sell its IP and brand to an interested buyer.

# Financial Plan

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## CAPITAL REQUIREMENTS

LIFELight will roll out with an initial capital outlay of \$600,000, funded entirely by the company founders. LIFELight expects to maintain a lean operation and implement a “Just In Time (JIT)” manufacturing process with upfront customer deposits on large orders. This strategy will limit the need for external funding and hence retaining more equity for founders and employees.

The initial capital will be used for:

- Sales & Marketing (S&M): \$100,000 in the first year and approximately 20% of revenues will be used towards sales, brand management and marketing activities.
- Overhead: 10% of revenues are expected to be spent towards salaries, benefits, and administrative costs.
- COGS: 50% of revenues are expected to be spent on manufacturing and shipping inventory.

## ASSUMPTIONS

1. LIFELight tubes will be in the market in 2021, its first year of operations. However, this effort will primarily serve to produce samples for our pilot airports. Actual commercialization of this product is scheduled to start in 2022.
2. LIFELight’s drop shipping approach involves contracting out production runs and shipping products directly to customers. As a result, elements like depreciation, holding inventory are not relevant to LIFELight’s business.

## SUMMARY FINANCIAL PROJECTIONS

Along with developing financial statements (in Appendix), a financial analysis on the investment was also performed. Below were the assumptions used.

LIFELIGHT FINANCIAL ANALYSIS	
<b>Revenue</b>	
Price per unit	\$105
Annual price increase	2%
<b>R&amp;D</b>	
Non-Recurring Engineering Costs	\$400,000
<b>Tax</b>	
Property tax	0%
State tax	9%
Federal tax	21%
Effective tax rate	30%
<b>Labor</b>	
S&M (% of sales)	15%
Overhead (% of sales)	10%
COGS (% of sales)	50%
Working capital Reserved (% of current year's COGS)	25%
<b>Cost of Capital</b>	
D/E ratio	0%
Interest rate	3%
Return on equity	35%
% Equity	100%
% Debt	0%
WACC	35%

The analysis demonstrates a strong NPV of \$1.4M in 5 years with a required return rate of 35% and shows a positive IRR of 79%.

Required Return	35%						
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	
Initial Investment PIC	-\$600,000						
Net Inflows		-\$94,750	\$184,538	\$922,688	\$1,845,375	\$4,613,438	
Total Cash Flows	-\$600,000	-\$94,750	\$184,538	\$922,688	\$1,845,375	\$4,613,438	
NPV using excel	-600,000	-\$70,185	\$136,694	\$683,472	\$1,366,944	\$3,417,361	\$1,390,532
IRR			-52%	19%	54%	79%	

## BREAK-EVEN ANALYSIS

Three types of financial projections were considered: Conservative, Realistic and Aggressive. In all cases, LIFELight expects to reach positive net margins within the second year of its operations. Below chart reflects our assumptions for the realistic model. In year 5, LIFELight expects to achieve a sales milestone of 250,000 units in run-rate which represents over 30 airports serviced. A sharp rise in revenue is expected after this point because subsequent patronage should include new customers and existing customers who will need a replacement for previously purchased tubes since the expected life span of each tube is one year.

LIFELight expected sales forecast. Expected volumes per airport can range between 8,000 and 13,000 units (LIFELight tubes).

- 1 airport in 2022
- 4 more airports in 2023; total 5
- 10 more in 2024; total 15
- 15 more in 2025; total 30

### Breakeven Analysis





## **RISK & REWARD ANALYSIS**

As part of our risk identification, we have considered the following risks which we feel could be of interest to investors:

### **1. Changes in Buying Pattern**

There is the possibility of a decline in buying patterns especially when the current COVID-19 abates since this appears to be a major factor that may drive the expected demand for LIFELight. As a way to mitigate this, we have resolved to continue to embark on cost control techniques to ensure that LIFELight (with its health benefits) can also compete in price with ordinary LED bulbs and tubes in future.

### **2. Effect of Competition**

There is no doubt that the success of LIFELight in the marketplace will attract competitors into this market. We are therefore pursuing an aggressive sales strategy and are poised to ensure continuous improvements to make us stay on top of customer preference. Additionally, LIFELight will invest most of their initial paid-in capital to produce Intellectual Property and exclusive Branding which will serve as strong long-term moats for the company.

## **EXIT STRATEGY**

Our goal is that LIFELight will grow into a conglomerate where other public health safety products will be developed and offered to the global market. However, below are a few options that LIFELight may consider to maximize value for its stakeholders:

- Buy back after initial 3 years of operation
- Selling the business to a friendly buyer
- Consider favorable acquisition terms

## APPENDIX: FINANCIAL STATEMENTS

Income Statement					
Account	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025
<b>Revenue</b>	<b>\$10,500</b>	<b>\$1,050,000</b>	<b>\$5,250,000</b>	<b>\$10,500,000</b>	<b>\$26,250,000</b>
COGS	0	\$525,000	\$2,625,000	\$5,250,000	\$13,125,000
<b>Gross Profit</b>	<b>\$5,250</b>	<b>\$525,000</b>	<b>\$2,625,000</b>	<b>\$5,250,000</b>	<b>\$13,125,000</b>
Operating Expenses	\$100,000	\$262,500	\$1,312,500	\$2,625,000	\$6,562,500
<b>EBITDA</b>	<b>-\$94,750</b>	<b>\$262,500</b>	<b>\$1,312,500</b>	<b>\$2,625,000</b>	<b>\$6,562,500</b>
Taxes	\$0	\$77,963	\$389,813	\$779,625	\$1,949,063
<b>EBIDA</b>	<b>-\$94,750</b>	<b>\$184,537</b>	<b>\$922,687</b>	<b>\$1,845,375</b>	<b>\$4,613,437</b>
<b>Net Income</b>	<b>-\$94,750</b>	<b>\$184,537</b>	<b>\$922,687</b>	<b>\$1,845,375</b>	<b>\$4,613,437</b>

Balance Sheet					
Account	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025
<b>Assets</b>					
Cash	\$105,250	\$289,787	\$1,212,474	\$3,057,849	\$7,671,286
Intangible Assets (IP)	\$400,000	\$400,000	\$400,000	\$400,000	\$400,000
<b>Total Assets</b>	<b>\$505,250</b>	<b>\$689,787</b>	<b>\$1,612,474</b>	<b>\$3,457,849</b>	<b>\$8,071,286</b>
<b>Liabilities &amp; Equity</b>					
Paid-in-capital	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000
Retained Earnings	-\$94,750	\$89,787	\$1,012,474	\$2,857,849	\$7,471,286
<b>Total Liabilities &amp; Equity</b>	<b>\$505,250</b>	<b>\$689,787</b>	<b>\$1,612,474</b>	<b>\$3,457,849</b>	<b>\$8,071,286</b>

## APPENDIX: FINANCIAL STATEMENTS (CONTINUED)

Cash Flow Statement					
Account	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025
Net Income	-\$94,750	\$184,537	\$922,687	\$1,845,375	\$4,613,437
<b>Total Operating Cash flows</b>	<b>-\$94,750</b>	<b>\$184,537</b>	<b>\$922,687</b>	<b>\$1,845,375</b>	<b>\$4,613,437</b>
Intellectual Property Expense	-\$400,000	\$0	\$0	\$0	\$0
<b>Total Investing Cash Flows</b>	<b>-\$400,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
Increase in Paid-in capital	\$600,000	\$0	\$0	\$0	\$0
<b>Total Financing Cash Flows</b>	<b>\$600,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Total Cash Flows</b>	<b>\$105,250</b>	<b>\$184,537</b>	<b>\$922,687</b>	<b>\$1,845,375</b>	<b>\$4,613,437</b>
Beginning Cash		\$105,250	\$289,787	\$1,212,474	\$3,057,849
<b>Ending Cash</b>	<b>\$105,250</b>	<b>\$289,787</b>	<b>\$1,212,474</b>	<b>\$3,057,849</b>	<b>\$7,671,286</b>

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