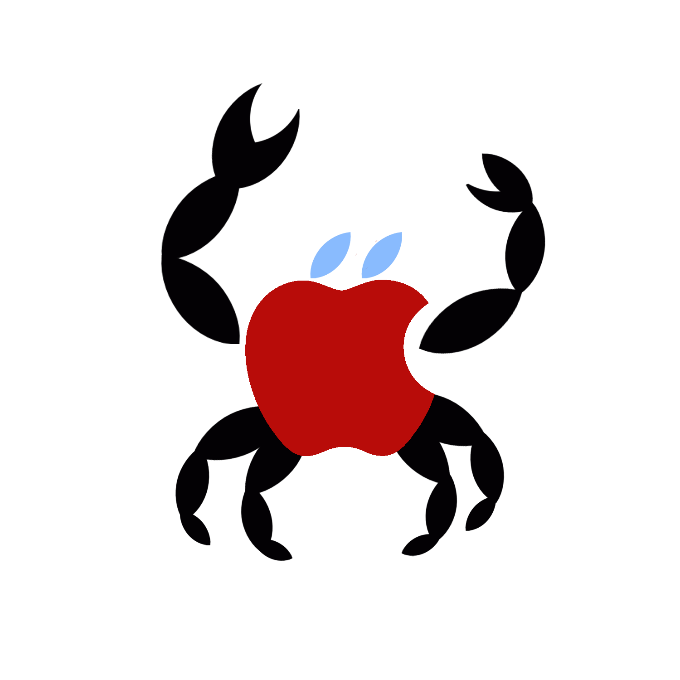
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**Sustainable Vents**

**Ecovent 1.20**

**Business Plan**

**Friday, January 27, 2023**

**Prepared By**

**MAC:**

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| **Tvisha Agarwal** | **Will Baker** | **Cecilia Beckerbauer** |
| **Thomas Cooper** | **Toni Shabaltiy** | **Noah Wilber** |

Executive Summary

Sustainable Vents was founded to provide the best user experience possible while saving one’s gas and electricity bills from inflation. HVAC systems make up 46% of all energy costs in the United States, and with the rising prices from oil, electricity, and gas this forces people to make choices that they shouldn’t have to. We strive to provide our users with short term benefits, temperature control and HVAC efficiency, and long-term benefits including efficiency of each room that the Ecovent 1.20 is installed in. Seeing as there is a 6% increase in the next 5 years projected for both the HVAC and energy markets, we see much potential with launching the Ecovent 1.20 in this new division of these markets. We would be operating on a single good and service corporation until further innovation.

We would provide the Ecovent 1.20s and their upkeeping services at affordable prices, and will be targeting the residential market of the United States. A majority of our customers would be uneducated in HVAC systems and older than 55. Our most direct competition would be companies like Arzel Zoning Systems that have preexisting HVAC zoning systems. Companies like Daikin are also our competition as they, as of very recently, have looked into diversifying their goods and services. With this knowledge, we have chosen to create a marketing strategy foundation of content marketing and social media marketing. Search engine optimization would be the main marketing support for these two strategies. However, we do still plan on employing earned media and PR, and Google advertising strategies if finances permit. Based on this marketing strategy system, we have decided to operate on economy pricing and cost-plus pricing strategies in an effort to support this marketing foundation and retain customers.

We plan on operating as remotely as possible seeing as this would be operating in multiple rooms per location. Tvisha Agarwal is our Director of Marketing. Will Baker is our Director of Hardware. Cecilia Beckerbauer is our Director of Business Actions. Thomas Cooper is our Director of Device Software. Toni Shabaltiy is our Director of Design. Noah Wilber is our Director of Servers. Financially speaking, we do foresee exponential profits within six months of launch due to the demand of HVAC systems in today’s economies and the fact that we would be creating our own sub-market.

Company Overview

Mission Statement

At Sustainable Vents, we strive to provide the best user experience possible to not only save you money, but also time. Our Ecovent 1.20 provide our users with an unparalleled insight into the efficiency of their HVAC system. It is this insight that not only saves money in the short term, but additionally issues a long-term oversight of their HVAC system.

Philosophy

HVAC systems make up 46% of all energy costs in just the United States, and to install our competitors would cost anywhere from 3-15,000 on the low end. That is excluding the installation of a new air conditioner and furnace that would additionally necessary for our competitors to run properly. Here at Sustainable Vents, we believe that this is unnecessary and provides an incentive against going green. Factor in the growing inflation of the current economy and soon bills become very costly for just a month of living with temperatures below 50˚F. With this situation at hand, we strived to provide a cost-effective simple device with not only an affordable install, but also a large rate of versatility.

Vision

By providing such a simple and affordable device, we strive to provide users with short term and long-term benefits. By using our device to control the physical vents themselves, thus controlling the room-by-room temperatures, we provide a regulated HVAC system, cutting an electricity and gas bill in half within 6 months of use. In addition to this saving of money, our web servers provide a long-term insight into the efficiency of each room in the HVAC system. Utilizing this, one can discover what rooms are leaking air and/or need to be ventilated more.

Outlook

With the projected 6% increase in the next 5 years, we believe that our Ecovent 1.20 can aid with increase of affordability of products and an ease into going green. We know that we are a one-of-a-kind organization with unmatched product capabilities, and we strive to use that position to help the affordability of sustainability increase. We want to provide an experience that would not only benefit our users, but also the world.

Type of Industry

We would be operating in the HVAC and energy markets of the United States. These markets have vital niche markets that are non-existent currently due to the power of our competitors in both of these markets. We view this as a valuable opportunity to provide our innovation and services to the United States, especially with the economic situation at hand.

Business Structure & Ownership

We have structured into a single good and support services corporation. This enables us to focus on the upkeep and production of our Ecovent 1.20s. Additionally, it allows a growth possibility shall we develop further innovations that would aid in our vision.

Services

Description

Provide a detailed description of each of the IT services the company is offering.

At Sustainable Vents, we will be offering the Ecovent 1.20 and the upkeep services to the market basket. With the Ecovent 1.20, our prototype clearly shows how it will be a simple, small box that will house our Raspberry Pi Pico W with the E-Ink Display. This box will also house a 9V battery and the two temperature sensors with the motor. To attach the Ecovent 1.20, one would simply lift up their vent out of the floor duct, and clip our two wires, from the motor, to inside seams of the two blades. Once this is complete, one would plug the battery in and let the device run while sitting on top of the open/close latch of the floor vent. The Ecovent 1.20 uses two different temperature sensors to read the temperature of the vent air and the room air temperature. With a simple Boolean comparison, the device will determine if the vent needed to open or closed to maintain a moderate room temperature set by the user. If the floor vent needs to be opened or closed, the motor will run, pulling the wires in the appropriate direction, for the desired action. We are looking into possible sizing down our current device to as small as possible, and will be looking into possibly improving the open/close mechanism and the location (placing inside the floor vent to avoid a tripping hazard if possible). By using a 9V battery and the E-Ink display, our device will be able to withstand a power outage shall there be one, allowing the efficiency of one’s home to remain constant. Utilizing the Wi-Fi capabilities of the Raspberry Pi Pico W, we are additionally offering a web/mobile app that can be used to provide valuable user awareness. Our app would monitor how long and how many times that vent needed to be opened and closed to help show a user the efficiency of their room. This efficiency would be used to show the user if their room is leaking air or not as well, thus preserving the cost-saving benefits of our devices in the long run. It would also display the humidity of the room, shall someone like a musician deem it beneficial for their use. The Ecovent 1.20 in conjunction with its web/mobile app, will be able to not only provide the short-term benefits, HVAC efficiency and lowering of gas and electricity bills, but also long-term benefits including user awareness and efficiency readings for each room. We would be offering upkeeping services that would include 6-month check-ins to maintain the software and hardware properties.

Value Proposition

Our company sees this as a highly beneficial device and service to our customers in not only cost-effective ways, but also sustainability. Our devices are incredibly versatile and will be consistently updated promoting a longer, more sustainable good. We will also be upkeeping all hardware and software component allowing our users to benefit further. With these reasons, we are pricing our device at $19.99 per device, and $100 per upkeep service visit.

Marketing Analysis

Industry Overview and Trends

Currently the HVAC system market size is projected to reach 271.5 billion by 2026, and the energy market is among the same. There is a trend of fueling the demand of the consumers by producing more commercial and residential applications. There is a narrow spread of technologies in the HVAC market, with the energy market having only about 20% more in terms of technology and innovation diversity. Through COVID, the HVAC market dropped which caused a huge push to becoming more digital and cloud-based as an entire market. The energy market on the other hand, saw immense growth in residential due quarantining, but saw a sharp decline in commercial and governmental markets. The HVAC markets have mostly returned to before 2020 normal, but the energy markets are still seeing a unnormal low in commercial and governmental markets. With the Russia and Ukraine, conflict the HVAC markets have seen an increase in price due to the number of raw materials sourced from the area. Energy markets are feeling a bulk of this conflict however as seen with the immense and rising gas and oil prices all over the world. It is this conflict that is allowing OPEC, including Russia, to take advantage of the consumers as the demand of energy will have inelastic in demand.

Target Market

Within the HVAC and energy markets, there are a wide range of target demographics for our Ecovent 1.20s. The large majority of our consumers would be 55 years and older, and there is no correlation between genders in terms of consumption. Our consumers have statically been found to want to spend anywhere from $3,000 to $7,000, but some are still willing to pay up to $9,000. In terms of general knowledge concerning specifically HVAC systems, our consumers have typically shown that they know of the different types, but they do not know the difference. This is where our marketing strategies would best play in to help provide this missing knowledge. As for preferences, a number of surveys from the Bureau of Labor Statistics show that system reliability is the number one preference when deciding to purchase an HVAC or energy system. Cost, efficiency, and comfort are the next three preferences with about the same weight for each allowing them to be seen as a bundle often. Geographically, most of our consumers would like to see our product produced in the US and with the technology manufacturing found here, we believe that is possible to market to.

Market Size

|  |  |  |
| --- | --- | --- |
| **Draw Area** | **Size** | **% Of Total** |
| HVAC: Devices | 118,200,000,000 | 30% |
| HVAC: Upkeep Services | 78,800,000,000 | 20% |
| Energy: Devices | 364,200,000,000 | 20% |
| Energy: Upkeep Services | 546,300,000,000 | 30% |
| **Total** | **1,089,500,000,000** | **100%** |

Market Segmentation

|  |  |
| --- | --- |
| **Demographic**   * Under 25: 1% * 25-34: 9% * 35-44: 16% * 45-54: 21% * 55-64: 25% * 65+: 28% | **General Knowledge**   * Under $3000: 12.4% * $3000-$5000: 27% * $5000-$7000: 26.3% * $7000-$9000: 21.8% * $9000+: 13.5% * Have not heard of mini-split or ductless systems: 38% * Have heard of mini-split or ductless systems, but doesn’t know the difference: 49% * Have heard of and know the difference between mini-split or ductless systems: 13% |
| **Psychographic**   * System Reliability Preference: 38% * Cost Preference: 17% * Efficiency Preference: %17 * Comfort Preference: 16% * Reputable Brand Preference: 7% * Humidity Control Preference: 3% * IAQ Preference: 2% | **Geographic**   * US made no matter what: 53% * US made at same price: 26% * Don’t care where it is made: 21% |

SWOT Analysis

|  |  |
| --- | --- |
| **Strengths**   * Improving the efficiency of the HVAC system * Displays a room temperature on the floor vent device and the on the web app * Affordable * Intuitive | **Opportunities**   * Save money * Keep rooms in a consistent moderate temperature * Incredibly versatile * No expensive install * No need to purchase a whole new system |
| **Weaknesses**   * More work needed to finalize device * An internet connection is necessary to access the web app * Relying on customers updating the device when it is needed to be done | **Threats**   * Threat of copying due to a lack of copyright * Our competitors have a larger foothold in the market * Have to compete with HVAC zoning systems |

## 

Competition

Direct and Indirect Competition

|  |  |  |
| --- | --- | --- |
| **Sustainable Vents** | **Direct Competitor** | **Indirect Competitor** |
| Devices with Web App access, and upkeep services | Arzel Zoning Systems | Daikin |

Competitive Analysis

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Strength** | **Weakness** | **Opportunity** | **Threat** |
| Sustainable Vents | * Improving the efficiency of the HVAC system * Displays a room temperature on the floor vent device and the on the web app * Affordable * Intuitive | * More work needed to finalize device * An internet connection is necessary to access the web app * Relying on customers updating the device when it is needed to be done | * Save money * Keep rooms in a consistent moderate temperature * Incredibly versatile * No expensive install * No need to purchase a whole new system | * Threat of copying due to a lack of copyright * Our competitors have a larger foothold in the market * Have to compete with HVAC zoning systems |
| Arzel Zoning Systems | * Sustainable development * Number of acquisitions * Frequent quality inspection * Strong brand network | * High prices * Marketing not up to the mark * Zero presence in other segments * Lack of differentiation * Dependency | * Technological advancement * Increase the depth of product portfolio * Emerging markets * Skilled labor | * Mature markets * Intense competition * Dropping margins * Shortage of skilled human resources * Saturation in urban markets and stagnation in rural markets |
| Daikin | * Sustainable development * Number of acquisitions * Frequent quality inspection * Innovations * Future expansions * Strong brand network * Huge manpower force | * High prices * Marketing not up to the mark * Zero presence in other segments * Lack of differentiation * Dependency | * Technological advancement * Increase the depth of product portfolio * Emerging markets * Introducing small appliances * Skilled labor | * Mature markets * Intense competition * Dropping margins * Shortage of skilled human resources * Saturation in urban markets and stagnation in rural markets |

Marketing Plan

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| **Content Marketing** |
| By utilizing infographics, case studies, and user-generated content on social media, through social media marketing, and drawing the customers with Pay-Per-Click, through Google advertising marketing, we will create a sustainable marketing base. We intend to keep a content calendar and create buyer personas. These paired with the social media marketing and Google advertising marketing will allow us to fixate on our strengths and maintain a balance and foundation for our overall marketing strategy. |

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| **Social Media Marketing** |
| To promote the content created with content marketing, we would utilize social media marketing on a variety of social media platforms including Instagram, Tik Tok, Twitter, and LinkedIn. We would strengthen this by utilizing Google advertising, but we would use this as our foundational marketing strategy in conjunction with content marketing. We would also keep a calendar for furthered organization. Search engine optimization would also help promote this. |

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| **Search Engine Optimization** |
| To help promote and grow our foundational content and social media marketing strategies, we would utilize search engine optimization. We will have to do quite a bit of keyword research and how to best utilize this strategy as it can get in depth very quickly. We will most likely not be able to use this right away due to the sheer amount of research needed to use it properly, but we do want to focus on using it as a main support beam for our foundation. |

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| **Earned Media and PR** |
| When starting any small business, the local community is always going to be your initial most prosperous customers. With this, we plan on utilizing the earned media and PR marketing strategy to help pull in these local customers. We plan on doing this by creating a large positive start. We want people to be talking about the positives of our company and the Ecovent 1.20. This is a very time-consuming strategy so we will be phasing it out by focusing more and more on content and social media marketing. |

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| **Google Advertising** |
| This will be the costliest strategy out of all those that we plan on operating on. This is due to the fact that it is on a Pay-Per-Click system. Initially, this would not cost too much with only a few customers. However, with the exponential growth that we foresee by creating a new market, this can get expensive very, very quickly. Thus, we are planning to use this strategy the least. We do not see this becoming a dominant strategy, but do know of the benefits and will try to maintain a balance with that. |

Marketing Strategy

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| --- | --- |
| **Marketing Strategy 1** | Content Marketing |
| **Activities** | Infographics, case studies, user-generated content |
| **Success Criteria** | Creating buyer personas, improving our search engine optimization, keep a calendar, fixate on a few things inside social media marketing |

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| --- | --- |
| **Marketing Strategy 2** | Social Media Marketing |
| **Activities** | Instagram, Tik Tok, Twitter, LinkedIn |
| **Success Criteria** | Improving our search engine optimization, knowing our customers, keep a calendar, focus on content marketing |

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| --- | --- |
| **Marketing Strategy 3** | Search Engine Optimization |
| **Activities** | Utilize social media and content marketing as a key focus, use keywords appropriately |
| **Success Criteria** | Do lots of keyword research |

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| --- | --- |
| **Marketing Strategy 4** | Earned Media and PR |
| **Activities** | TV stories, journalism stories |
| **Success Criteria** | Create a large initial positive start, promote positivity, draw the attention that you want |

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| **Marketing Strategy 5** | Google Advertising |
| **Activities** | Pay-Per-Click |
| **Success Criteria** | Maintain a healthy balance between the financials with the other strategies and this one, make sure you know the limit |

Pricing Strategy

We have decided to operate on an economy pricing and cost-plus pricing strategies. In choosing an economy pricing, we decided that this one of the best fits for our Ecovent 1.20s as we hold affordability and accessibility as some of our most unique features. It is these features that set us out in the energy and HVAC markets, so it was a very simple choice to include an economy pricing strategy. Not only do we maintain these values by watching our competitors, but we feed into our other pricing strategy, cost-plus. By utilizing a cost-plus strategy in conjunction with the economy pricing strategy, we are able to embody the values of sustainability and simplicity. We formed Sustainable Vents in an effort to help push for more sustainability and support for the going green movement. There is no reason to be focusing on a profit for this organization, as we want to promote sustainability with our Ecovent 1.20s. However, since this is an entrepreneurial organization, we do expect a profit to be formed. Upon much consideration, we have decided that we wish to use this profit to help promote the going green movement and sustainability in other markets by financially supporting organizations, governments, and non-profits. Not only does this promote the green movement in our own markets, HVAC and energy, but it also allows the movement to gain more support and headway. Thus, the economy pricing and cost-plus pricing strategies best aid our organization in embodying the values that we hold closest as an organization: Affordability, accessibility, sustainability, and going green.

Operational Plan

Operating Hours

As an organization, we promote a non-toxic and supportive environment. This includes encouraging our employees and ourselves to set boundaries between home and work life, supporting their mental health, and promoting a welcoming community of friends rather than just co-workers. This plays out heavily in our operating hours as we will not be operating on any federal or general holiday. We also will provide mental health days, team bonding activities, group volunteering sessions, and other support systems to promote our desired environment. Additionally, our flexibility and simplicity allow us to work under 10 hours per week and still make a viable living. We will be increasing pay to a salary system, but seeing as we are just a start-up there is no need.

Location

Seeing as our organization does not need a location currently, we have decided that we will operate remotely until it is necessary to get a warehouse. With the design of our product, manufacturers are more able to provide the numbers that would be demanded, and only shipping would need to be handled on our side of the operations. All of our upkeep services, can be done remotely due to the Raspberry Pi Pico Ws having Wi-Fi. We do foresee having to get a warehouse eventually for an inventory storage center, and we would ideally be able to manufacture our devices without a third party. However, we do not feel that is necessary at the moment so thus we would be operating remotely until then.

Key Staff

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| --- | --- | --- | --- |
| **Name** | **Tvisha Agarwal** | **Will Baker** | **Cecilia Beckerbauer** |
| **Position** | Director of Marketing | Director of Hardware | Director of Business Actions |
| **Date Joined** | Nov. 7, 2022 | Nov. 7, 2022 | Nov. 7, 2022 |
| **Salary** | $10.50/hr.  ~ $2,520/yr. | $10.50/hr.  ~ $2,520/yr. | $10.50/hr.  ~ $2,520/yr. |
| **Name** | **Thomas Cooper** | **Toni Shabaltiy** | **Noah Wilber** |
| **Position** | Director of Device Software | Director of Design | Director of Servers |
| **Date Joined** | Nov. 7, 2022 | Nov. 7, 2022 | Nov. 7, 2022 |
| **Salary** | $10.50/hr.  ~ $2,520/yr. | $10.50/hr.  ~ $2,520/yr. | $10.50/hr.  ~ $2,520/yr. |

Financial Plan

Assumptions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sustainable Vents** | | | | |
| **Business Start-Up Costs in USD** | | | | |
| **FUNDING** |  | **Estimated** | **Actual** | **Over/(Under)** |
| **Investor Funding** |  | | | |
|  | Owner 1: Tvisha Agarwal | 150.00 | 150.00 | 0.00 |
|  | Owner 2: Will Baker | 150.00 | 150.00 | 0.00 |
|  | Owner 3: Cecilia Beckerbauer | 150.00 | 250.00 | +100.00 |
|  | Owner 4: Thomas Cooper | 150.00 | 250.00 | +100.00 |
|  | Owner 5: Toni Shabaltiy | 150.00 | 250.00 | +100.00 |
|  | Owner 6: Noah Wilber | 150.00 | 250.00 | +100.00 |
|  | **Total Investment** | 900.00 | 1,300.00 | +400.00 |
|  | | | | |
| **Loans** |  | | | |
|  | Bank Loan 1 | 75,000.00 | 75,000.00 | 0.00 |
|  | **Total Loans** | 75,000.00 | 75,000.00 | 0.00 |
|  |  |  |  |  |
| **TOTAL FUNDING** |  | **75,900.00** | **76,300.00** | **+400.00** |
|  | | | | |
| **COSTS** |  | **Estimated** | **Actual** | **Under/(Over)** |
| **Fixed Costs** | | | | |
|  | Advertising for Opening | 600.00 | 550.00 | -50.00 |
|  | Basic Website | 200.00 | 200.00 | 0.00 |
|  | Brand Development | 100.00 | 50.00 | -50.00 |
|  | Business Cards/Stationery | 200.00 | 194.00 | -6.00 |
|  | Business Licenses/Permits | 100.00 | 100.00 | 0.00 |
|  | Computer Hardware/Software | 10.00 | 10.11 | +0.11 |
|  | Legal/Professional Fees | 300.00 | 150.00 | -150.00 |
|  | Operating Cash (Working Capital) | 100.00 | 150.00 | +50.00 |
|  | Point of Sale Hardware/Software | 15.00 | 12.00 | -3.00 |
|  | Prepaid Insurance | 100.00 | 111.00 | +11.00 |
|  | Reserve for Contingencies | 200.00 | 250.00 | -50.00 |
|  | Starting Inventory | 500.00 | 600.00 | +100.00 |
|  | Telephone | 25.00 | 25.00 | 0.00 |
|  | Tools & Supplies | 50.00 | 67.00 | +17.00 |
|  | **Total Fixed Costs** | **2,500.00** | **2,469.11** | **-30.89** |
|  | | | | |
| **Average Monthly Costs** | | | | |
|  | Advertising | 100.00 | 115.00 | +15.00 |
|  | Business Insurance | 30.00 | 24.00 | -6.00 |
|  | Employee Salaries and Commissions | 1,260.00 | 1,260.00 | 0.00 |
|  | Inventory, Raw Materials, Parts | 1,000.00 | 1,000.00 | 0.00 |
|  | Internet Connection | 60.00 | 60.00 | 0.00 |
|  | Loan and Credit Card Interest & Principal | 1,350.00 | 1,362.38 | +12.38 |
|  | Legal/Accounting Fees | 50.00 | 25.00 | -25.00 |
|  | Miscellaneous Expenses | 12.00 | 30.00 | +18.00 |
|  | Payroll Taxes or Self-Employment Tax | 648.00 | 660.96 | +12.96 |
|  | Postage/Shipping Costs | 50.00 | 75.00 | +25.00 |
|  | Supplies | 50.00 | 25.00 | -25.00 |
|  | Telephone | 25.00 | 25.00 | 0.00 |
|  | Website Hosting/Maintenance | 50.00 | 50.00 | 0.00 |
|  | **Total Average Monthly Costs** | 4,685.00 | 4,712.34 | -27.34 |
|  | **x Number of Months** | **12** |  |  |
|  | **Total Monthly Costs** | **56,222.00** | **56,548.08** | **-328.08** |
|  | | | | |
| **TOTAL COSTS** |  | **58,720.00** | **59,017.19** | **-297.19** |
|  | | | | |
| **SURPLUS/(DEFICIT)** |  | **17,180.00** | **17,282.81** | **-102.81** |

Six-Month Sales Forecast

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Draw Area | Price Point | February  2023 | March  2023 | April  2023 | May  2023 | June  2023 | July  2023 | Total |
| Devices Sold | 19.99 | 1,999.00 | 3,298.35 | 5,437.28 | 8,955.52 | 14,706.10 | 24,347.82 | 58,744.07 |
| Upkeep Services | 100.00 | 0.00 | 0.00 | 0.00 | 10,000.00 | 16,500.00 | 27,200.00 | 53,700.00 |
| Subtotal | 119.99 | 1,999.00 | 3,298.35 | 5,437.28 | 18,955.52 | 31,206.01 | 51,547.82 | 112,444.00 |