



# PRODUCT DOCUMENT

TP11 – FiveS

VicEnerG

Version 4.0

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# 1. Introduction

## 1.1 Purpose and Scope

The report's purpose acts as the VicEnerG product document, which will list detailed information necessary to other sponsors to understand the whole website's deliverables. VicEnerG, an energy-saving project, mainly provided a list of technologies to Victorian families in Australia to help them apply green energy and reduce their utility bills. The document will record the basic information of the proposed system, how the application works, and plans for sponsors of understanding, implementing, and managing it. Instructions on special functions or issues and possible risks will also be considered.

## 1.2 Problem Statement

Most Victorians have found that the increased usage of water and electricity is due to the impacts of Covid-19 and climate change. This is not environmentally friendly and may result in financial hardship.

## 1.3 Audience

The target audience of the website is Victorian families facing the increased usage of water and electricity issues. In the meantime, the audience of this report will be future sponsors to comprehend, determine and review the product.

## 1.4 The importance of the product

According to news, due to the lockdown during the Covid-19, residential energy consumption has risen between 15 and 29 percent, and it leads Australians to pay more than \$17 million worth of electricity bills. Victorians may not be able to afford the payment without an efficient way if the lockdown continues. Thus, we developed the VicEnerG for residents to solve this problem.

# 2. Proposed System

## 2.1 Fundamentals & Key Features

Our website *VicEnerG* targets all sexual Victorian who pay the electricity bills in Victoria, mainly aged 30 to 45 and are family members. The web application provides users with information about solar panels and water recycling systems. Users can use calculators to get the possible electricity-saving data or the water calculator to calculate how much rainfall they can recycle.

- Learn about solar energy and get the benefits of using solar energy
- Grasp the rebate status of solar panels to purchase solar panels at a discount
- Calculate how much electricity can be saved by using solar panels
- Get information about Victoria's carbon emissions
- Calculate how much carbon emissions can be reduced by using solar panels
- Calculate how much rainwater can be recycled through the water recycling calculator

Product link: <https://www.vicenerg.team>

## 2.2 Benefits

Firstly, the solar panels we recommend can help users save electricity in a long-term and sustainable manner, and users can get rid of the impact of high electricity bills on their own economic situation to a certain extent.

Secondly, the use of solar panels is also helpful to the environment. The use of solar panels can help reduce carbon emissions and is of great significance to the environmental protection of Victoria.

Thirdly, calculating the recoverable rainwater through a calculator is one of the effective ways to alleviate the water crisis. This can not only alleviate the water expenditure of household finances, but also help save the use of Victoria's fresh water resources.

## 3. Product Overview

### 3.1 Daily Maintenance

In the future, the website may need at least one administrator to manage the daily task; a data scientist and a web programmer are necessary to update the system.

#### 3.1.1 Expectation on a day-to-day basis

For day-to-day basics, only one network administrator is responsible for managing the application. The network administrator should be skilled in solving network issues.

Training might be required depending on their experience. The training should take no more than three working days, and it is mainly done by watching instruction videos. Unfortunately, FiveS does not provide a training plan for this, but there are a lot of related instruction videos that can be found on google and youtube.

However, the system is expected to have an upgrade after a period of time. In that time, a data scientist and a web programmer are expected to update the system. Both roles should be professional as they are responsible for the key features of the system. Training is required, and it can be done by watching instructional videos online as well. The specific training process and the content will be described in the support document.

#### 3.1.2 Plans for new owners

The network administrator needs guidance on how to check the server status and how to back up. The network administrators can back up the system on time and maintain server-status health after training.

For the data scientist, he needed to efficiently collect new data from the data source, analyze it, and finally update the latest data to the system's dataset.

For the web developer, he needs to be proficient in using the ASP.NET development system to troubleshoot the system when errors are found.

#### 3.1.3 System implementation

The web application is developed using ASP.NET Framework. Hence, it will live in Virtual Machine with image Windows Server 2019 Data Centre. The license required is the license of the image OS. There are no major risks when implementing and maintaining this web application.

### 3.1.4 Security Aspect

There is no personal data stored in the web application, hence no privacy issue for the project. For the security aspect, the first concern is the Overall Framework Security which contains Security Misconfiguration, Using Components with Known Vulnerabilities, and Man-In-The-Middle Attack (MITM). The second concern is Functionalities Security includes Injection (SQL, XSS). All concerns have been fully addressed and tackled. Firewall has been enabled in the web application's VM and the database. SSL certificate has also been installed for the web application to protect the communication between client and server.

## 3.4 Overview of testing

A few testings have been performed, including unit tests, usability tests, acceptance tests, and security testing, to ensure the quality and safety of the web application.

# 4. Administrative Documents

## 4.1 Support Documents

We will provide a support document available for day to day running of the website. The purpose of supporting documentation is to clarify the tasks of the new operator or management team and to ensure that they can effectively coordinate various tasks and smoothly implement various plans. This article will provide the administrator with more detailed information for him to use the program and provide guidance when upgrading or patching. It includes the content and training requirements that he needs to complete every day, as well as information such as website data and tests.

## 4.2 Maintenance Documents

We will provide a maintenance document for future change. We will list the most detailed information about the website in the maintenance file. Maintenance documents can give effective guidance to staff when maintaining the system. This document will include the security issues of the application, the environment that the software supports, and a detailed description of the program modules, database characteristics, error conditions, and website testing.

# 5. Future Enhancements

The system can extend service to other states, such as Queensland and New Zealand. Because the system can get the required data of these two states through the current platform. So more data can be added to the database to expand the database. Then add regional options for other states on the website so that more people can be helped, like people who live in Queensland want to reduce electricity or water bills.