Minutes of CALMAC Website Committee Status Call
December 14, 2022, 2 PM PST

Re: Bi-monthly in person status call of the CALAMC Website Committee.

Present: Cynthia Rogers, California Energy Commission

            Kevin Ehsani, Southern California Gas Company

            Reginald Wilkins, Southern California Edison

            Brian Smith, Pacific Gas and Electric

            Tim Caulfield, Caulfield Consulting

            Jeff Yip, Third Strand

Absent: Kelvin Valenzuela, San Diego Gas and Electric

            Unassigned, California Public Utilities Commission

The Website Committee video call lasted approximately 45 minutes, with the following areas of concentration:

- The first 20 minutes of the call focused the project status part of the presentation and was narrated by Tim Caulfield. The essence of the presentation is that the project met its stated goals of creating and posting the weather files, and maintaining the website, on time and within budget. Several long term maintenance issues remain for the weather files.
- The remaining 25 minutes focused on the slide titled "Looking Forward", and was led by Brian Smith of PG&E. The discussion concentrated on the history of CALMAC.org, the contracting and co-funding agreements, and the concept of posting typical load profiles by sector and utility on CALMAC.org. PG&E IT security assessment was also discussed.

The attached presentation supplies the body of the minutes of the call.

The next status call will be held once the new contract is in place, in order to reserve existing funds for site maintenance.

CALMAC Maintenance and Weather File Creation Project

Status Report to
CALMAC Website Committee

December 14, 2022

Presentation will cover:

- Accomplishments for Project Overall.
- Tasks Uncompleted.

- Detail available in Appendices for later review by committee members.

Accomplishments :
Weather Code Automation

- Prepared CALMAC.org to accept code.

- Imported code from White Box Technologies (WBT) into CALMAC.org.

- Worked with WBT to understand code; including areas needing human judgment and expertise in WBT code process.

- Worked through automation of these steps.

- Verified with WBT that the automation steps produce accurate results.

- Finalized the automation code.

- Tested the code for robustness.

- Included functionality to initiate the production of weather files daily or on request.

Accomplishments (continued):
Weather Code Automation

- Made first yearly weather data transition from 2021 to 2022. Year 2022 weather files are being automatically updated on the site daily.

- Developed API for bulk download of weather data. Supplied to PG&E staff beta version for testing March 22nd. Posted API on site for general use.

- Developed and listed the CA climate zone for each weather station along with longitude and latitude data. Made data available on CALMAC.org.

- Changed Web Server to more secure HTTPS.

- Replaced License Agreement with Terms of Use in weather files

Accomplishments:

- Automation of the weather file process was the **main** goal of this project.
- Prior to starting this project, the ability to achieve this goal was unknown.
- **This goal has been achieved**.

Accomplishments between August and December 2022

- Work on changing over the mid-year change over from modeled solar radiation data to satellite derived solar radiation data is currently underway due to delay in solar data availability. Hope to complete by end of 2022. This task will always require human review.

- **Completed code annotation.**

- Conducted routine maintenance and operation tasks on the site.

Tasks Remaining:
Issues with Automation needing resolution

- Need to address how "Compiled Code" can be kept viable long term.

- Need to decide how to handle when weather stations go off line, or new stations are created.

- Periodic review and adjustment of algorithms will be required (3 to 5 year cycle?)

Review:

- Accomplished automation of weather files.
- Accomplished creation of weather file web interface.
- Changed www.CALMAC.org to HTTPS.
- Completed API for downloading weather files.

Questions or Input?

Looking Forward

- Current CALMAC Administration Contract (2020-2022)

- Status of New CALMAC Administration Contract Renewal (2023-2024)

- Potential Addition to File Hosting for CALMAC: Customer Load Profiles

Detail Appendix
CALMAC Maintenance and Weather File Creation Project

Status Report to
CALMAC Website Committee
September 14, 2022

Primary Project Structure

- Task 1 – Management and Maintenance of CALMAC Website
- Task 2 – Administration of the CALMAC Website Committee
- Task 3 – Creation, Automation and Posting of California Weather Files
- Task 4 – Host Updates of the California Weather Reference Files

Maintenance of CALMAC.org and Website Committee Support Tasks 1 and 2

- These tasks are a continuation of the project that has been going on since CALMAC.org was taken over by the CALMAC Website Committee in 2000.

- **Tasks completed August through December 2022:**
  - **Posted 18 new reports to the Searchable Database; monitored website; hosted website.**
  - **Facilitated CALMAC Website Committee call.**
  - **Supplied updated spending projections to PG&E.**

- **These tasks run for the duration of the contract.**

(Slide from PI Meeting Presentation)

Create, Automate and Host Weather Files Tasks 3 and 4

- This is the new portion of the CALMAC project.

- The objective is to "automate" the process of creating and posting of the weather files needed by California evaluators.

- There was considerable uncertainty about how successfully the team can automate the process of creating the weather files. This is meticulous work and often requires judgement and expertise that is difficult to automate.

- The Project Team will work on a best efforts basis to set up a file creation process that can be reproduced accurately and reliably, but complete success is far from guaranteed.

Project Steps – Task 3.1 and 3.2 Move code to web and validate

- Task 3.1 – Move the current White Box Technologies code for creation of weather files to the web
  - Create a Web-based platform - **Complete**
  - Transfer the White Box Technology to the platform – **Complete**
  - Study the current code and attempt to automate the processes – **Complete**
  - Adapt the computer code as necessary to work in the web environment – **Complete**
- Task 3.2 – Validate the Code
  - Create weather files using the web based code – **Complete, this process has been used to create the weather files since August 2021.**
  - Confirm that they web based code produces the same results as the files previously produced by White Box Technologies – **Complete – the weather files are created using the same software used previously, it is simply done on the web.**

Project Steps – Task 3.3 and 3.4
Adapt code to web and Annotate

- Task 3.3 – Adapt Software to Automate Processes

  - Review results of Task 3.1 and 3.2 with CALMAC Project Manager and Website Committee. **Complete.**

  - Refine and adapt software to automate the process for creation of weather files. **Complete**.

  - Minimize the time and subject matter expertise needed to operate the software and clean its output. **95% Complete. Still need to review outstanding expert participation with project manager and Website Committee.**

  - "The level of "automation" that will be possible with the budget of this contract will be determined by the Statewide Project Manager and/or the CALMAC Website Committee." [quote from the contract language.] **Proof of concept complete.**

- Task 3.4 - Annotate the code developed and approved in Task 3.3 so that routines and subroutines can be reviewed you CPUC. Note: Confidentiality of proprietary software is an essential element of this review. **100% Complete.**

Project Steps – Task 3.5, 3.6, 3.7 and 4 Make the Weather Files Available

- Task 3.5 – Develop a web interface for the creation of the weather files. **Complete**

- Task 3.6 – Modify the code to use National Renewable Energy Laboratory (NREL) radiation data to create annual weather files based on actual radiance data, rather than modeled data. **Complete**

- Task 3.7 – To the extent possible, create an Applications Programming Interface (API) to facilitate the ease of downloading the weather files by users. **Complete**

- Task 4 – Host the weather files and download applications on CALMAC.org to make monthly and annual files available to the evaluation community. **Complete – The weather files are already hosted on the CALMAC website and are automatically updated daily. Note: The new weather files are not in a monthly format, but are simply be year-to-date files to the last date the file was created.**

Project Budget/Expenditure Specifics

- Contract Duration – January 2021 through December 2022.

- Total funding – $195,000, Original budget split detailed below:

  - Task 1 – Management and Maintenance of Website - $70,000

  - Task 2 – Administration of Website Committee - $25,000

    Tasks 1 & 2 have been combined for billing purposed since distinguishing the effort spent on administering the Website Committee from managing the website is difficult. Total budget for Task 1/2 reset to $71,000. **This task is at 93% expenditure as of November 30, 2022. Task 1/2 will come in at or below budget**.

  - Task 3 – Development and deployment of weather code - $80,000

  - Task 4 – Maintenance and hosting of weather files - $20,000

    Tasks 3 & 4 have been combined for billing purposed since distinguishing the effort spent on weather file code creation and automation from the creation and storage of files is difficult. The total budget for Task 3/4 is reset to $124,000. **This task is at 91% expenditure as of November 30, 2022. This task will come in at or below budget.**