# Preliminary Assessment Public Summary

This is a *Preliminary Assessment Public Summary* prepared by Puro.earth, which contains general information about the CO2 Removal Supplier, a non-technical summary of the project, and a table containing details about the criteria assessed. The CO2 Removal Supplier has received an extended Preliminary Assessment Report that includes additional remarks and recommendations for the continuation of the certification journey.

## 1. Supplier and project information

| $CO_2$ Removal Supplier | |
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| **Company name** | Scotts Valley Energy Corporation ("SVEC") |
| **Company address** | 1005 Parallel Drive, Lakeport, California 95453 |
| **Business ID** | 5867699 |
| **KYC status** | Completed (2024-09-16) |
| **$CO_2$ Removal Project** | |
| **Methodology** | **Biochar, Edition 2022, Version 3** |
| **Production Facility name** | Scotts Valley Energy Corporation - Red Hills |
| **Facility registration date** | 2024-07-31 |
| **Production Facility ID** | 387584 |
| **Production Facility location** | Red Hills Road, Kelseyville, 95451, California, USA |
| **Host Country of removal** | USA |
| **Has this facility been registered in another registry?** | ☒No<br>☐Yes, additional information: |
| **Assessment details** | |
| **Date of assessment** | 2024-09-24 |
| **Status of assessment** | Final |
| **Conclusion of assessment** | Passed |

## 2. Non-technical project summary*

The Red Hills project is a 200kW AC biomass conversion facility that will convert non-commercial grade wood waste to electricity, biochar, and carbon credits (CORC's). The project is being developed by Scotts Valley Energy Corporation and it is an economic development and social justice initiative of the Scotts Valley Band of Pomo Indians, based in Lakeport, California. The project is expected to be operational in early September of 2025. The project uses pyrolysis to create synthesis gas in an oxygen deprived environment to establish its compliance with net-zero operations. The project is being capitalized through a combination of developer equity from SVEC, Investment Tax Credits under section 48 and debt facilities provided by Community Development Financial Institutions (CDFI). CORCS's are available on a discounted basis to creditworthy institutional buyers on a long-term pre-sale basis. Biochar is being sold as a soil amendment to farmers and ranchers in California.

*Filled by the Supplier. Between 150-200 words

The definition of $CO_2$ Removal Supplier and Production Facility can be found in the Puro Standard.

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## 3. Criteria assessment report

Reminder: Sub-criteria either concern the Production Facility's technical eligibility or its maturity and quality. There are three types of sub-criteria:

- **Required to be passed:** These correspond to the core criteria related to the eligibility of a Production Facility. Suppliers must meet these criteria, as they may otherwise be impossible or costly to change at a later stage of the certification journey.
- **Required to be assessed**: These criteria are important for evaluation but do not necessarily determine pass or fail at this stage, as it is understood that the suppliers may be at different stages of development.
- **Not required:** These criteria are optional at this stage. They may provide additional information about the project maturity but are not essential for passing the preliminary assessment.

For a facility to be considered eligible for listing, all the sub-criteria that condition eligibility must be met (i.e. passed or assessed). If one of those sub-criteria is not met, the facility in its current state of development is not eligible for listing.

Disclaimer: The assessment has been made against the criteria in the current version of the methodology. Puro.earth relied on the $CO_2$ Removal Supplier for the correctness of the provided information during the time of the preliminary assessment and will make no representation as to the accuracy or completeness of this report. The $CO_2$ Removal Supplier must undergo a third-party audit before issuing $CO_2$ Removal Credits (CORCs). **Passing the preliminary assessment does not guarantee a success in the third-party audit.**

**Overall evaluation:** Preliminary Assessment is **Passed**.

*Table 1. Criteria and sub-criteria assessment by Puro based on the documents submitted.*

| ID | Criteria / Sub-criteria | Outcome | Comment | Evidence reviewed | Requirement for listing | Purpose of criteria |
|---|---|---|---|---|---|---|
| **C1** | **Planned biomass feedstock(s) is(are) eligible** | **Passed** | | | *Passed if required sub-criteria are met* | |
| *C1.1* | *Biomass feedstocks are identified and compatible with EBC positive list* | Passed | The facility is planning to use: wood from firesafe clearing (F-02), wood from forestry thinning (F-01, F-02), wood from wildfire recovery (F-01, F-02), wood racked in forests from previous thinning efforts (F-01, F-02), and wood chips from utility infrastructure clearing (F-01, F-02). These forestry-based feedstocks are EBC compatible. In addition, walnut shells are intended to be used (AG-05), also allowed for biochar production, as an agricultural residue. | C1. Summary of Planned Biomass Feedstocks.docx<br><br>SVE Puro C4.0 additionality questions to suppliers v1.8.pdf<br><br>C6. 2023-Apr SVEC Business Plan.pdf<br><br>C1. Biomass types and origins list.xlsx | Required to be passed | Technical eligibility |

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| *C1.2* | *Biomass feedstock sustainability and chain-of-custody can be demonstrated, if applicable* | Passed | The wood is produced during the course of normal forest management operations, there is a noted co-benefit of wildfire reduction within the Mendocino National Forest. SVEC declares that the forestry-based feedstock is already part of the PG&E BIOMAT program for sustainably sourced biomass. Further details on forest biomass sustainability will be required for the audit.<br>No evidence is required for walnut shells, besides record keeping of origin and amounts consumed. | C1. Biomass types and origins list.xlsx | Required to be passed | Technical eligibility |
| *C1.3* | *Bioenergy leakage related to feedstock use is minimal* | Assessed | Wood chips from utility infrastructure clearing and walnut shells were combusted for bioenergy production. Since the Red Hills Bioenergy facility will also be producing electricity for the local grid, bioenergy leakage is deemed minimal. | C1. Summary of Planned Biomass Feedstocks.docx<br><br>SVE Puro C4.0 additionality questions to suppliers v1.8.pdf<br><br>C1. Biomass types and origins list.xlsx | Required to be assessed | Technical eligibility |
| *C1.4* | *Land use change related to feedstock use is minimal* | Assessed | SVEC declares that the forestry-based biomass is sourced during normal forest management operations, while walnut shells are an agricultural waste stream. Therefore, no land use changes are associated with the feedstock use. | C1. Summary of Planned Biomass Feedstocks.docx<br><br>C6. 2023-Apr SVEC Business Plan.pdf | Required to be assessed | Technical eligibility |
| *C1.5* | *Sourcing of biomass is secured (e.g. letters of intent, contracts)* | Assessed | A letter of intent between a biomass provider and SVEC has been drafted, regarding annual provision of 1400 metric tons of chipped forest material to be used as the feedstock for SVEC's hybrid pyrolysis/gasifier units for a period of 3 years, with the provision of annual extensions thereafter. No information provided about securing sourcing of walnut shells. | C1. and C3. Biomass Sourcing_ SVEC LOI.docx | Not required | Maturity & Quality |
| **C2** | **Planned biochar production equipment is technically sound** | **Passed** | | | *Passed if required sub-criteria are met* | |
| *C2.1* | *Several options of reactor design have been identified* | Passed | Hybrid pyrolysis and gasifier reactor designs from Omni BioEnergy, LLC were considered for the production facility. | C2. and C8. Biochar production equipment questionnaire.xlsx<br><br>C2. Omni BioEnergy Tech Specs.pdf | Required to be passed | Technical eligibility |
| *C2.2* | *Reactor design has been decided, contracted, or purchased* | Assessed | Omni BioEnergy's Artis 200 model (hybrid of pyrolysis and gasification) has been decided for | C2. and C8. Biochar production equipment questionnaire.xlsx | Required to be assessed | Maturity & Quality |

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| | | | the project. The equipment was manufactured in 2020 and has been in operation since 2023. | C2. Omni BioEnergy Tech Specs.pdf | | |
| *c2.3* | *Reactor design is vetted, regarding production of biochar with H/C ratio below 0.7* | Passed | Temperature, heating rate, and residence time indicated by the supplier, combined with the feedstock type, is deemed possible to produce biochar with an H/C below 0.7. Tests for similar equipment and feedstock were provided, resulting in an H/C around 0.3. Tests for this facility will need to be provided for audit. | C2. and C8. Biochar production equipment questionnaire.xlsx<br>C2. Omni BioEnergy Tech Specs.pdf | Required to be passed | Technical eligibility |
| *c2.4* | *Reactor design is vetted, regarding risk for $CH_4$ emissions* | Passed | The gasifier system includes a catalyst to break down oil and tars into easily combustible gases (primarily $H_2$ and CO, and a small amount of $CH_4$). This modified gas stream is combusted in an electrical genset or in a safety flare, both equipped with safety systems and design measure to ensure complete combustion. $CH_4$ emissions are therefore expected to be negligible under the described operating conditions.<br>An emissions summary provided by the equipment manufacturer for the Red Hills facility presents zero values of $CH_4$ from the genset and flare exhausts; but details on the methods of measurements and calculations were not available. | C2. and C8. Biochar production equipment questionnaire.xlsx<br>C2. Omni BioEnergy Tech Specs.pdf<br>C2. Red Hills Emission Summary 2024.pdf | Required to be passed | Technical eligibility |
| *c2.5* | *Reactor design is vetted, regarding air pollutant emissions in line with local regulation* | Passed | The bioenergy plant has been designed to adhere to local regulation, from the Lake County Air Quality Board. Several air pollutants will be monitored (CO, NOx, VOC). A comparable facility has been approved / permitted to operate by the EPA. The Red Hills facility has applied for approval. | C2. and C8. Biochar production equipment questionnaire.xlsx<br>C2. Omni BioEnergy Tech Specs.pdf<br>C2. Red Hills Emission Summary 2024.pdf<br>Red Hills Air Quality App Approval<br>SVEC RH Approved Modified Major Use Permit 06 23.pdf | Required to be passed | Technical eligibility |
| *c2.6* | *Facility design is vetted, regarding disposal of waste streams, including any liquid streams (wastewater, oil, tars)* | Passed | The system is designed to break down oil and tars into easily combustible gases via catalysts. Hence, formation of tars and oils is minimal. The catalyst can be cleaned once per year with | C8. Environmental Evaluation Report.pdf<br>C2. and C8. Biochar production equipment questionnaire.xlsx | Required to be passed | Technical eligibility |

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| | | | steam injection and no additional external waste.<br>Small volumes of water used to quench biochar are recycled on the premises. Particulate air filters used in the process can be recycled or disposed in trash. Minor amounts of soot are removed every 1-2 months from an ash bucket from the catalyst bed.<br><br>The production facility is therefore deemed to generate minimal waste and have suitable management plans. | C2. Mass and energy balance of production process_6.12.24.xlsx | | |
| *c2.7* | *Facility is co-producing bioenergy (e.g. heat, power) for internal use* | Assessed | A portion of the syngas will be used to generate electricity to sustain the reaction. The reaction is heated by electricity. | C2. and C8. Biochar production equipment questionnaire.xlsx | Required to be assessed | Maturity & Quality |
| *c2.8* | *Facility is co-producing bioenergy (e.g. heat, power, fuel) for external use* | Assessed | Excess electricity generated will be exported to the local grid. Amounts remain to be confirmed. | C6. 2023-Apr SVEC Business Plan.pdf | Required to be assessed | Maturity & Quality |
| **c3** | **Biochar planned end-use(s) is(are) eligible** | **Passed** | | | *Passed if required sub-criteria are met* | |
| *c3.1* | *Biochar end-uses are eligible* | Passed | The biochar will be used as a soil amendment. It will be sold in bulk to a company that produces soil-amended biochar which will be used for agriculture and forestry applications.<br>Some secondary uses mentioned in the company's Business plan may be ineligible. | SVEC RH Approved Modified Major Use Permit 06 23.pdf<br>C3. Summary of Planned Biochar End Use.docx<br>C6. 2023-Apr SVEC Business Plan.pdf | Required to be passed | Technical eligibility |
| *c3.2* | *Plans of biochar end-uses are tangible* | Assessed | A letter of intent is in place with the supplier of the biomass, who intends on purchasing biochar. An official contract is expected to be in place before operations commence. | C3. Summary of Planned Biochar End Use.docx<br><br>C1. and C3. Biomass Sourcing_ SVEC LOI.docx | Required to be assessed | Maturity & Quality |
| *c3.3* | *Biochar environmental quality thresholds are known for the identified end-uses* | Assessed | The environmental quality thresholds have not been stated for the end-use. The supplier is awaiting laboratory results. Comparison to EBC benchmarks for soil use will be required. | Audit Document Index – Biochar.xlsx | Required to be assessed | Maturity & Quality |
| **c4** | **Additionality is demonstrated** | **Passed** | | | *Passed if required sub-criteria are met* | |
| *c4.1* | *Carbon storage additionality to baseline* | Passed | The baseline scenarios include woody waste that would be left to decay in forests, and walnut shells that would be shipped to produce | SVE Puro C4.0 additionality questions to suppliers v1.8.pdf | Required to be passed | Technical eligibility |

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| | | | bioenergy. In both cases, long term carbon storage is secured. | | | |
| *c4.2* | *Financial additionality of facility* | Passed | Financial cash flow model includes sensitivity analysis based on project cash flows, including, CAPEX, OPEX, and carbon credit and biochar revenues. Without carbon credit revenues the project is not deemed to be financially viable. | C4. SVEC Pro Forma Model_8.7.24 | Required to be passed | Technical eligibility |
| *c4.3* | *Regulatory additionality* | Passed | SVEC declared that biochar production is not mandated in the jurisdiction of the project. | SVE Puro C4.0 additionality questions to suppliers v1.8.pdf | Required to be passed | Technical eligibility |
| *c4.4* | *Production equipment is newly built (i.e. not an existing facility or a retrofit of existing facility)* | Assessed | The production equipment is newly built, in operation since 2023. | C2. and C8. Biochar production equipment questionnaire.xlsx<br><br>C2. Omni BioEnergy Tech Specs.pdf | Required to be assessed | Maturity & Quality |
| **c5** | **Facility has monitoring, reporting, and LCA capabilities or tangible plans** | **Passed** | | | *Passed if required sub-criteria are met* | |
| *c5.1* | *Protocol for biomass and biochar record keeping is prepared* | Assessed | SVEC commits to implementing a comprehensive record-keeping system as outlined in the MRV plan, ensuring the accurate tracking of biomass feedstock flow and biochar production. This system will capture key data elements related to biomass sourcing, biochar production, and the sale and distribution of biochar products. | C5. Summary of MRV plans.docx | Required to be assessed | Maturity & Quality |
| *c5.2* | *Protocol for dry mass determination of biochar is prepared* | Assessed | The MRV plan contains a high-level protocol for determining the dry mass of biochar, to be further refined. | C5. Summary of MRV plans.docx | Required to be assessed | Maturity & Quality |
| *c5.3* | *Protocol for biochar sampling and laboratory analysis is prepared (permanence and environmental quality)* | Assessed | The MRV plan does not include a protocol for biochar sampling and laboratory analysis. Note that Omni BioEnergy conducted independent biochar verification through the IBI Certification Program, but SVEC has not indicated that this would be their option. | C5. Summary of MRV plans.docx<br><br>C2. Omni BioEnergy Tech Specs.pdf | Required to be assessed | Maturity & Quality |
| *c5.4* | *Monitoring and reporting plan of facility emissions is prepared* | Assessed | The MRV plan contains high-level guidelines for monitoring pollution emissions, to be further refined. | C5. Summary of MRV plans.docx | Required to be assessed | Maturity & Quality |
| *c5.5* | *An LCA model specific to the facility's operation is prepared* | Not required. | No LCA model was yet provided for evaluation. | Not required. | Not required | Maturity & Quality |
| **c6** | **Facility has likely co-benefits and positive SDG impacts** | **Passed** | | | *Passed if required sub-criteria are met* | |

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| *c6.1* | *Facility-specific co-benefits have been identified* | Assessed | Co-benefits resulting from the project activity includes diverting waste from landfill, economic development for the Scotts Valley Band of Pomo Indians, energy resilience and independence, and re-establishing tribal sovereignty. | C6. Summary of Co-Benefits and SDG Impacts.docx | Required to be assessed | Maturity & Quality |
| *c6.2* | *Facility-specific SDG targets or indicators have been identified* | Assessed | Specific SDGs have not yet been listed. | No information provided. | Required to be assessed | Maturity & Quality |
| **c7** | **Facility team has access to relevant knowledge and skills** | **Passed** | | | *Passed if required sub-criteria are met* | |
| *c7.1* | *Relating to biomass sourcing, handling, processing* | Assessed | The team has an LoI with a biomass supplier who will process and supply biomass for SVEC. | C1. and C3. Biomass Sourcing_ SVEC LOI.docx | Not required | Maturity & Quality |
| *c7.2* | *Relating to thermochemical processes* | Assessed | The team contains individuals with experience in the field. | C7. Team Bios.pdf | Not required | Maturity & Quality |
| *c7.3* | *Relating to biochar use* | Assessed | The team has an agreement with a biochar user who will mix it with organic compost to produce a soil amendment suitable for its intended use. | C1. and C3. Biomass Sourcing_ SVEC LOI.docx | Not required | Maturity & Quality |
| *c7.4* | *Relating to monitoring and carbon accounting* | Assessed | The supplier has engaged a 3rd party dMRV specialist. | C7. Team Bios.pdf | Not required | Maturity & Quality |
| **c8** | **Environmental and social safeguards** | **Passed** | | | *Passed if required sub-criteria are met* | |
| *c8.1* | *Stakeholder consultations have been planned or conducted* | Assessed | Initial communication channels have been established between Scotts Valley Band of Pomo Indians, and individual and group stakeholders. It is noted that a dispute is being resolved regarding wood chipping and onsite storage between stakeholders who neighbor the identified storage site. This requires attention and full resolution prior to audit. | 240720 SVEC Org Chart.pdf<br><br>C6. 2023-Apr SVEC Business Plan.pdf | Required to be assessed | Maturity & Quality |
| *c8.2* | *Regulation applicable to facility has been identified* | Assessed | The supplier has identified permitting needs from the local municipality and regional authorities, as well as regulation regarding air pollutant emissions for such facilities. | Red Hills CEQA - State Comments 2020010407_DTSC Comment.pdf<br><br>SVEC RH Approved Modified Major Use Permit 06 23.pdf<br><br>C2. and C8. Biochar production equipment questionnaire.xlsx | Required to be assessed | Maturity & Quality |
| *c8.3* | *Procedures to acquire relevant permits have been identified, started, or completed* | Assessed | The facility has been granted a Major Use Permit for a small-scale bioenergy production facility using woody biomass to produce syngas and | Red Hills Air Quality App Approval.pdf<br><br>SVEC RH Approved Modified Major Use Permit 06 23.pdf | Required to be assessed | Maturity & Quality |

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| | | | biochar. Procedures to obtain other necessary permits are known and have been started. | Red Hills CEQA - State Comments 20200104O7_DTSC Comment.pdf | | |