REQUEST FOR INFORMATION

FOR

DATA ANALYTICS PLATFORM SERVICES

RFI Release Date: October 30, 2020

RFI Submittal Deadline: December 4, 2020 at 5:00 PM Pacific Time

1 Contents

2 Silicon Valley Clean Energy Overview

Silicon Valley Clean Energy (SVCE), a Community Choice Energy agency, is redefining the local electricity market and providing our residents and businesses with new clean energy choices— renewable and carbon–free electricity at competitive rates. SVCE was formed as a Joint Powers Authority in 2016, and now serves approximately 270,000 residential and commercial electricity customers across a service area comprised of the following thirteen communities: Campbell, Cupertino, Gilroy, Los Altos, Los Altos Hills, Los Gatos, Milpitas, Monte Sereno, Morgan Hill, Mountain View, Saratoga, Sunnyvale and unincorporated Santa Clara County. Approximately 97% of electricity customers in SVCE's service area receive their electricity from SVCE. For more information on SVCE, please visit: https://www.svcleanenergy.org/.

As a load serving entity, SVCE requires a sophisticated data analytics platform to underpin its business functions. A secure, centralized data analytics platform will enable SVCE to make data-driven decisions in a timely manner, enhance data security, improve management oversight, and streamline workflows, among many other key benefits.

3 RFI Overview

SVCE is considering how to best to develop its data analytics platform given its current data systems and workflows. Specifically, SVCE is planning to expand its cloud-based data warehouse (DAISY 1.0[1]) into a more robust platform that will support its data warehousing, data analytics, and reporting needs (DAISY 2.0). DAISY 2.0 will serve as a central, secure repository of data with proper ETL systems in place, and will enable efficient, high-impact analyses and reporting via integrated applications and tools. Broadly speaking, SVCE will leverage DAISY 2.0 to derive four levels of insight and value from its data.

- Descriptive – *What is the current state?*
- Diagnostic – *How did we achieve the current state?*
- Predictive – *What will happen?*
- Prescriptive – *What should be done?*

To achieve this, DAISY 2.0 is envisioned as a platform that will retain existing DAISY 1.0 functionalities and incorporate additional functionality, as well as applications and tools to address specific use cases, including but not limited to the following.

- Load forecasting
- Load shape analysis and load disaggregation
- Precision program design & targeting
- Customer segmentation
- Virtual power plant (VPP) management

SVCE believes that there is a large ecosystem of potential data analytics platform services, with a diverse range of functionality, that could support SVCE's data warehousing, data analytics, and reporting needs. We would like to learn more about them via this RFI. The RFI

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[1] The internal name for SVCE's data warehouse is "DAISY", an abbreviation of "Data Analytics in SVCE Service Territory".

provides some insight into SVCE's goals, current data systems, and expected areas of focus to allow Respondents the ability to tailor the explanation of their solution to SVCE's specific implementation.

SVCE is seeking information from Respondents on how their solutions could serve as key elements in SVCE's planned DAISY 2.0 platform. SVCE expects that no single vendor will be able to provide complete platform functionality that meets SVCE needs. Therefore, SVCE is also seeking information on how Respondents' solutions can integrate with one another.

THIS IS A REQUEST FOR INFORMATION (RFI) ONLY. This RFI is issued solely for information and planning purposes – it does not constitute a Request for Proposal (RFP) or a promise to issue an RFP in the future. This request for information does not commit SVCE to contract for any supply or service whatsoever. Further, SVCE is not at this time seeking proposals and will not accept unsolicited proposals. Respondents are advised that SVCE will not pay for any information or administrative costs incurred in response to this RFI, all costs associated with responding to this RFI will be solely at the interested party's expense. Not responding to this RFI does not preclude participation in any future RFP, if any is issued. If an RFP is released, it will be posted on the SVCE website at https://svcleanenergy.org/solicitations. It is the responsibility of the potential offerors to monitor the site for additional information pertaining to any future RFP.

SVCE is intending to learn from this RFI to help us understand how best to scope a data analytics platform RFP in the coming months. Organizations interested in responding to such a future RFP are encouraged to respond to this RFI, to help ensure that SVCE is aware of a broad range of potential strategies for DAISY 2.0.

4 RFI Tentative Timeline

The tentative schedule for the RFI is provided below for the convenience of Respondents. Please note the timeline may be subject to change at any time by SVCE. Any such changes will be stated in an addendum.

Description	Date
RFI issued	October 30, 2020
Pre-response teleconference (see section below)	November 5, 2020, starting at 1PM Pacific Time
Deadline for questions, clarifications (see section below)	November 13, 2020 at 5:00 PM Pacific Time
Question responses posted online	November 18, 2020 at 5:00 PM Pacific Time
Deadline for responses	December 4, 2020 at 5:00 PM Pacific Time

5 DAISY 1.0 Overview (current state)

DAISY 1.0 (current state) is a cloud-based data warehouse hosted on the Google Cloud Platform (GCP). SVCE leverages DAISY 1.0 and other tools to clean, store, integrate, export, analyze, and visualize its demand-side data. DAISY 1.0 has ingested and integrated several datasets, including but not limited to the following:

- Customer attribute data
- Monthly and interval electricity usage data
- Monthly gas usage data
- Public Safety Power Shutoff (PSPS) data
- Demand response program participation data
- Interconnection data
- Tax assessor parcel data
- Census tract-level data

In addition, systems are in development to facilitate daily data transfers from SVCE's meter data manager, Calpine. Map layers, dashboards, and reports are also being developed using the ingested data.

A number of essential data workflows are carried out outside of DAISY 1.0. Prior to ingestion into DAISY 1.0, dataset cleaning is carried out using Python, and geocoding and spatial analyses are carried out using ArcGIS Pro. In addition, data exported from DAISY 1.0 are analyzed and visualized using Python, R, and Excel.

SVCE seeks to integrate or streamline the above workflows in DAISY 2.0 to the extent possible.

6 DAISY 2.0 Overview (future state)

SVCE envisions the following functionalities, applications, and tools for its future data analytics platform, DAISY 2.0.

Core Functionalities

- Data storage
- ETL of SVCE, PG&E, Calpine, and other datasets, including:
    - Weather data (historical, real-time, and forecast), e.g. temperature, insolation, HDD, CDD, upper air data
    - CAISO market data, e.g. historical, real-time, and day-ahead prices, grid emissions
    - Third-party program data
    - Existing forecasting, procurement, scheduling, and settlement data from third-party services
    - Resource and physical asset data, e.g. forecasted generation, actual generation, pricing at local nodes
    - Air quality data
- Data warehousing
- Data visualization, including mapping capability
- Dashboards: create, save, share, update, and versioning

- Reports: create, save, share, update, and versioning
- Customizable user access permissions
- Ability to create custom tables
- Ability to integrate with third-party applications and standard tools such as Excel, Tableau, etc.
- Query library and version control
- Data provenance: ability to track data lineage and data processing steps

Applications and Tools

Below are the functionalities that SVCE is interested in addressing via integrated applications and tools. These functionalities are grouped into three categories based on level of priority to integrate into DAISY 2.0: *Key Applications*, *Secondary Applications*, and *Enabling Tools*. SVCE understands that many of these functionalities are interrelated and that a single application can address multiple functionalities.

Key Applications cover functionalities that are the most substantive and of greatest business interest to SVCE to integrate into DAISY 2.0.

Key Applications	Description
Load forecasting	Leverage weather data, customer-level AMI data and/or other key data sets and drivers to produce short-term (day-ahead and week-ahead) or long-term aggregate load forecast (month-ahead through 2030). Short-term load forecasts are used for scheduling, settlements, and hedging. Long-term load forecasts are used for hedging, long-term procurement and planning, retail rate revenue forecasting, and RPS procurement and compliance.
Precision program design & targeting	Leverage customer-level AMI data and other customer attributes to enhance program design capabilities and customer targeting.
Load shape analysis and load disaggregation	Enable load shape analysis at the customer-level, segment-level, and at other levels of aggregation. Disaggregate customer-level interval electricity data to identify the presence and attributes of appliances and DER technologies at the site.
Customer segmentation	Leverage customer-level AMI data and other customer attributes to develop and enhance customer segments for program design, rate design and targeted marketing purposes.
Virtual Power Plant (VPP) management	Track, manage, and analyze load and DERs for customers participating in VPP programs.
Public-facing dashboard	Create and maintain a secure, public-facing dashboard to inform SVCE customers. Features can include, but are not limited to, interactive maps and reports.

Secondary Applications cover functionalities that are of a second level of priority to integrate into DAISY 2.0.

Secondary Applications	Description
Evaluation, Measurement, and Verification (EM&V)	Leverage customer-level AMI data and/or other data sets to characterize and quantify the performance and impact of SVCE programs.
DER forecasting	Leverage weather data, historical load data, and/or other data sets to forecast behind-the-meter PV generation.
DER/electrification adoption models	Leverage customer-level AMI data, tax assessor data, and/or other datasets to conduct scenario analyses of DER and electrification adoption in SVCE territory through 2030.

Enabling Tools cover functionalities that are currently carried out outside of DAISY 1.0. Integrating these functionalities into DAISY 2.0 and automating them to the extent possible will significantly streamline SVCE workflows, especially as data becomes more abundant.
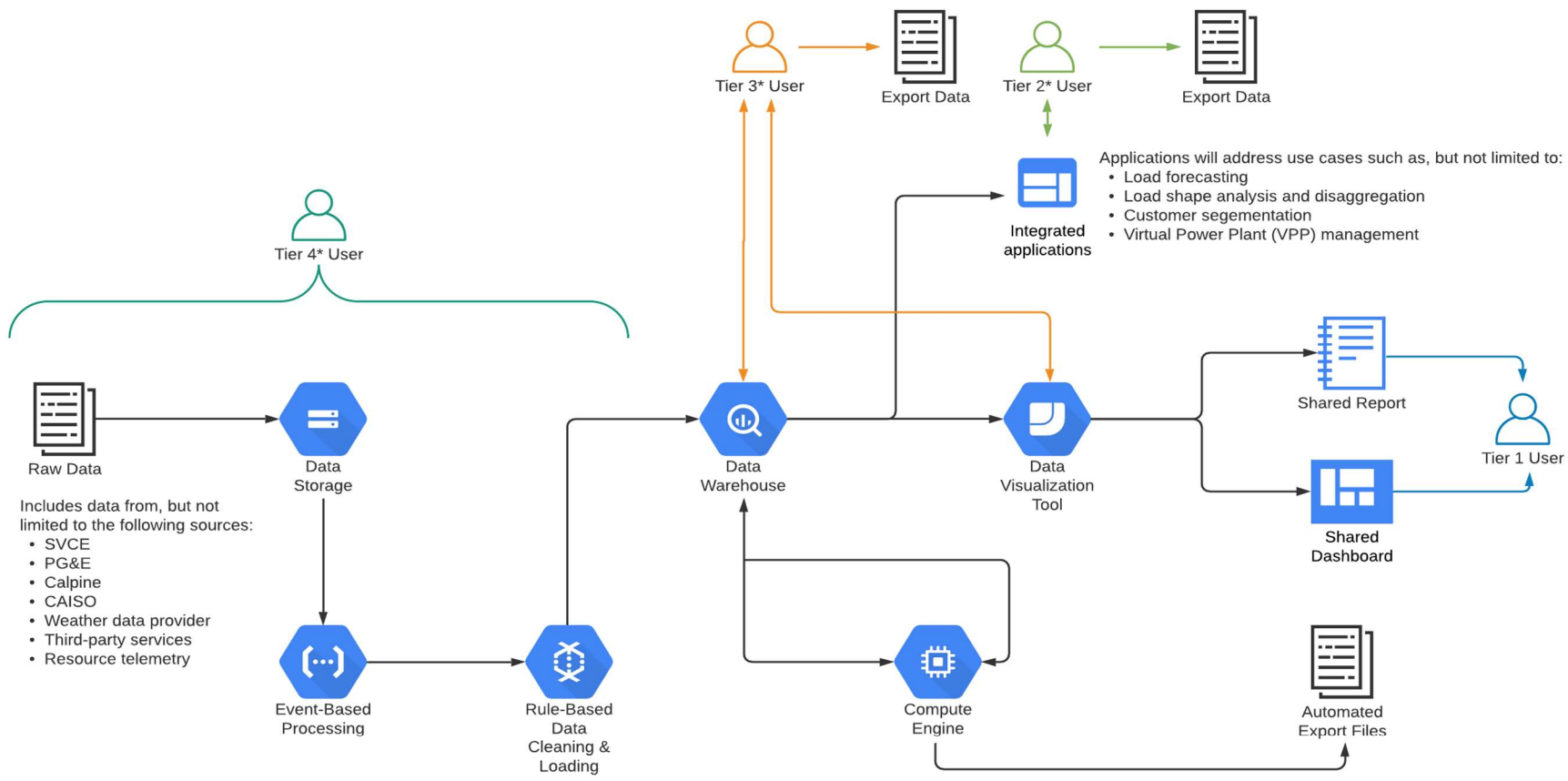
Enabling Tool	Description
Geocoding	Convert an address into latitude/longitude coordinates for the centroid of the parcel.
Spatial analysis	Enable spatial joins between features to link latitude/longitude coordinates to fields like assessor's parcel number (APN), census tract, etc.
Address standardization	Standardize addresses across datasets to improve address matching.
Weather normalization	Leverage weather data, historical energy consumption data and/or other key data sets to measure the impact of weather on electricity and natural gas consumption. Produce weather-normalized electricity and gas consumption profiles on a customer-level and in aggregate.
Python integration	Streamline the exchange of data between DAISY and Python for dataset cleaning, data analysis, and visualization purposes.
R integration	Streamline the exchange of data between DAISY and R for dataset cleaning, data analysis, and visualization purposes.

SVCE user roles for DAISY 2.0 can be loosely defined as the following:

Role	Functions	Minimum Background
Tier 1	• View and explore shared dashboards and reports	• N/A
Tier 2	• Use and extract insights from specific applications (e.g. load forecasting application) • All functions in Tier 1	• Familiarity with platform UI • Familiarity with relevant applications
Tier 3	• Perform ad hoc queries and export data • Create data visualizations • Conduct strategic analyses • All functions in Tiers 1 and 2	• SQL knowledge • Familiarity with platform UI • Familiarity with relevant applications
Tier 4	• Oversee data cleaning and ingestion • Create custom tables • Create, manage, and share dashboards and reports • All functions in Tiers 1, 2, and 3	• SQL knowledge • Familiarity with platform UI • Familiarity with all applications • Familiarity with all data sources • GIS experience

DAISY 2.0 should have customizable user access permissions to enable the creation of the above user roles, as well as other user roles that may be established in the future.

Tier 3* User

Export Data

Tier 2* User

Export Data

Applications will address use cases such as, but not limited to:
- Load forecasting
- Load shape analysis and disaggregation
- Customer segementation
- Virtual Power Plant (VPP) management

Integrated applications

Tier 4* User

Raw Data

Includes data from, but not limited to the following sources:
- SVCE
- PG&E
- Calpine
- CAISO
- Weather data provider
- Third-party services
- Resource telemetry

Data Storage

Event-Based Processing

Rule-Based Data Cleaning & Loading

Data Warehouse

Data Visualization Tool

Compute Engine

Shared Report

Shared Dashboard

Tier 1 User

Automated Export Files

*This user tier's functions also include the functions of lower-level user tiers.

Figure 1. SVCE user tier functions for DAISY 2.0

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Support Requirements

Support requirements for managing DAISY 2.0 include the following.

- Host, manage, and maintain SVCE's instance on GCP or similar cloud-based platform
- Manage data security measures and requirements, including for data transfer, data at rest, and data disposal
- Manage integrated applications and tools
- Develop and maintain ETL data pipelines
    - Ingest datasets into data warehouse on a regular basis, ranging from daily to monthly
- Develop and manage core tables, dashboards, reports, map layers
- Onboard and support staff
- Manage user roles and user access permissions
- Mitigate and resolve reported issues associated with the platform

Innovative Components

SVCE has an organizational focus on leveraging innovative ideas and strategies to pursue our goals. Responses to this RFI are encouraged to include components beyond those mentioned in the RFI if the Respondent believes that they would serve SVCE's goals. Innovative components could include applications and tools outside of what is scoped in the RFI, streamlining of SVCE data processes currently conducted outside of DAISY 1.0, integration of other high-impact public or third-party datasets, or something else not yet considered by SVCE.

7 Response Submittal

Interested parties are requested to respond to this RFI with **both** a written report and a slide deck. The written report should not exceed ten (10) pages, following the outline given below. The slide deck should not exceed thirty (30) slides and should be focused on describing the solution the Respondent is suggesting to SVCE, following the outline given below.

SVCE has prepared a list of guiding questions to be addressed in the Respondent's written report and/or slide deck.

1. Please describe the proposed solution, including which component(s) of DAISY 2.0 it addresses and how it will meet SVCE's needs.
2. Please describe how the proposed solution can integrate with other third-party platforms and/or applications.
3. To what extent will the proposed solution alter the current DAISY 1.0 data warehouse (e.g. migrating from GCP to another platform)?
4. To what extent can the proposed solution integrate with or streamline existing data workflows in R, Python, Excel, and ArcGIS Pro?
5. How will the proposed solution's user interface and functionalities support each user tier?
6. What level of SVCE staff support is needed to implement the proposed solution?
7. What are the industry standard measures your solution leverages for handling of sensitive data, including data transfer, data at rest, and data disposal?
8. How would a data breach of customer data be handled?

Reports and presentations (both in PDF format) are due no later than **December 3, 2020 at 5:00 PM Pacific Time**. Responses will be accepted via email only and shall be submitted to innovation@svcleanenergy.org. Proprietary information, if any, should be minimized and MUST BE CLEARLY MARKED (please see final paragraph of this section for more information). To aid SVCE, please segregate proprietary information. Please be advised that all submissions become SVCE property and will not be returned.

The written report should be structured according to the following:

- Section 1 shall provide administrative information, and shall include as a minimum: name, mailing address, phone number, and email of designated point of contact.
- Section 2 shall provide a brief summary of the solution being described in the response.
- Section 3 shall provide more information on the proposed implementation approach for the solution, including potential phasing/timeframes and key milestones.
- Section 4 shall provide information on the Respondent's organization, which should include background on the organization, previous customers served by the solution, overview of organization (including number of employees, revenues, legal structure and ownership), and description of primary business model(s).
- Section 5 shall provide cost information associated with the described solution. Respondents *will not* be expected to be bound by the cost information provided in this RFI in the event that SVCE chooses to later issue an RFP. This information is only intended to help SVCE understand the Respondent's business model and how they would engage with SVCE.

The slide deck should be structured according to the following:

- Section 1 shall provide the name of the Respondent's organization and a brief summary of the solution being described.
- Section 2 shall fully describe the solution that the Respondent is suggesting to SVCE. Sufficient detail and images should be included for SVCE to understand the intent of the solution, how it works, and how it would fit within the context of DAISY 2.0.

All parties acknowledge that SVCE is a public agency subject to the requirements of the California Public Records Act, Cal. Gov. Code section 6250 et seq. SVCE acknowledges that another party may submit information to SVCE that the other party considers confidential, proprietary, or trade secret information pursuant the Uniform Trade Secrets Act (Cal. Civ. Code section 3426 et seq.), or otherwise protected from disclosure pursuant to an exemption to the California Public Records Act (Government Code sections 6254 and 6255) ("Confidential Information"). Any such other party acknowledges that SVCE may submit to the other party Confidential Information. Upon request or demand of any third person or entity not a party to this RFI ("Requestor") for production, inspection and/or copying of information designated as Confidential Information by a party disclosing such information ("Disclosing Party"), the party receiving such information ("Receiving Party"), as soon as practical but within three (3) business days of receipt of the request, shall notify the Disclosing Party that such request has been made, by telephone call, letter sent via email and/or by US Mail to the address or email address listed on the cover page of the RFI. The Disclosing Party shall be solely responsible for taking whatever legal steps are necessary to protect information deemed by it to be Confidential Information and to prevent release of information to the Requestor by the Receiving Party. If the Disclosing Party takes no such action, after receiving the foregoing notice from the Receiving Party, the Receiving Party shall be permitted to comply with the Requestor's demand and disclose the requested Confidential Information.

8 Pre-Response Teleconference

SVCE will hold a pre-response teleconference to provide a brief overview of our goals for DAISY 2.0 and what we hope to learn from this RFI. Interested parties are encouraged to attend and ask any questions they may have. SVCE shall not be responsible for nor be bound by any oral instructions, interpretations or explanations issued by SVCE or its representatives. The teleconference will be held on **November 5, 2020, starting at 1PM Pacific Time**. The teleconference connection information is as follows.

> *https://zoom.us/j/92172454298?pwd=ZjBYZ0hkMTVYMGk1bGl3VDJBMjVYQT09*
>
> *Meeting ID: 921 7245 4298*
>
> *Passcode: 707906*
>
> *One tap mobile:*
>
> > *+13462487799,,92172454298#,,,,,,0#,,707906# US (Houston)*
> >
> > *+12532158782,,92172454298#,,,,,,0#,,707906# US (Tacoma)*
>
> *Find your local number:* *https://zoom.us/u/avZOYv5X1*

9 Questions

Questions regarding this announcement shall be submitted in writing by e-mail to **innovation@svcleanenergy.org**. Verbal questions will NOT be accepted. Questions will be aggregated and answered in an addendum posted on the SVCE solicitation webpage. Accordingly, questions shall NOT contain proprietary or classified information. Questions are due by **November 13, 2020 at 5:00 PM Pacific Time**.

10 Follow-Up Discussions

SVCE representatives may or may not choose to meet virtually with Respondents. Such discussions would only be intended to get further clarification of suggested solutions and ensure SVCE understands all requirements and risks.

11 Closing Remarks

THIS IS A REQUEST FOR INFORMATION (RFI) ONLY to identify sources that can provide information on developing DAISY 2.0. The information provided in the RFI is subject to change and is not binding on SVCE. SVCE has not made a commitment to procure any of the items discussed, and release of this RFI should not be construed as such a commitment or as authorization to incur cost for which reimbursement would be required or sought. All submissions become SVCE property and will not be returned.