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STAFF REPORT

ConSol Home Energy Efficiency Rating Services Application to Use the Energy BOSS External Digital Data Source

Staff Evaluation and Recommendation

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ABSTRACT

The *2019 Building Energy Efficiency Standards* allow a registration provider to use an external digital data source service as an alternative to keyed-in data entry for authorized users of the data registry. The registration provider must apply to the California Energy Commission (CEC) for approval to use the service (Title 24, Part 6, Reference Joint Appendix JA7.8).

ConSol Home Energy Efficiency Rating Services, Inc., a CEC-approved registration provider, applied to use the Energy BOSS external digital data source service with the associated data registry on June 16, 2021. Additional information and revisions to the application were submitted by the registration provider on November 19, 2021, and on December 10, 2021. A public comment period and staff workshop were also held to gather additional information on the application from interested stakeholders.

Staff has evaluated the complete external digital data source application, additional information, and live demonstration of the external digital data source features. Based on these evaluations, staff has found that the application complies with all applicable requirements in the *2019 Building Energy Efficiency Standards*. Staff recommends that the executive director approve ConSol Home Energy Efficiency Rating Services, Inc.'s application to use the Energy BOSS external digital data source service.

Keywords: Registration provider, data registry, external digital data source, Building Energy Efficiency Standards, Home Energy Rating System

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EXECUTIVE SUMMARY

The California Energy Commission (CEC) authorizes a registration provider to operate an approved data registry to record building project compliance documents for demonstrating compliance with the *Building Energy Efficiency Standards* (Title 24, Part 1 Chapter 10 and Part 6). A registration provider is an organization that administers and maintains a data registry. A data registry is a web service with a user interface and database that allows authorized users to record compliance data, register compliance documents, and verify the authenticity of the retained compliance documents. The data that is recorded includes building project information that is used to complete compliance documents. These documents are required for all newly constructed buildings, and additions and alterations to existing buildings. They contain the information necessary for local building departments and enforcement agencies to verify that a building project meets the *Building Energy Efficiency Standards*.

Data registries must be capable of receiving keyed-in data entry from a personal computing device via the data registry user interface. The *2019 Building Energy Efficiency Standards* provide an alternative method of data entry by using an external digital data source service. An external digital data source is a software or diagnostic tool that allows a user to record compliance data and transfer it to a data registry later.

Before using an external digital data source service, a registration provider must apply to the CEC for approval. The application requirements are specified in Title 20, section 1670 (et seq.) and Title 24, Part 6, Reference Joint Appendix JA7.

ConSol Home Energy Efficiency Rating Services, Inc. applied to use the Energy BOSS external digital data source on June 16, 2021. On August 31, 2021, the executive director determined that the external digital data source service application was complete (Title 24, Part 1, section 10-110[a]). Additional information was submitted on November 19, 2021, to address staff's evaluation for compliance. Final revisions to the application were submitted on December 10, 2021, to amend the list of compliance documents that will use data from the external digital data source.

As part of the approval process, staff must perform acceptance testing to verify that the proposed external digital data source complies with all applicable requirements in Reference Joint Appendix JA7. To meet this requirement, ConSol Home Energy Efficiency Rating Services, Inc. and the external digital data source service provider Energy performed a live demonstration to staff of the features identified in the application. The live demonstration included use of the external digital data source and data registry to securely gather and store compliance data, securely transfer compliance data to the data registry, review and revise transmitted compliance data, validate compliance data, and sign and complete registered compliance documentation for all forms optioned for external digital data source input.

Staff has evaluated the complete external digital data source application, additional information, and live demonstration of the external digital data source features. Based on these evaluations, staff has found that the application complies with all applicable requirements in the *2019 Building Energy Efficiency Standards*. Staff recommends that the executive director approve ConSol Home Energy Efficiency Rating Services, Inc.'s application to use the Energy BOSS external digital data source service.

CHAPTER 1:

Background

External digital data source (EDDS) services are optional data entry systems used by a data registry. A registration provider¹ may provide an alternative to manual keyed-in data entry into a data registry for completing and registering compliance documents by authorized users² via an EDDS service provider. The compliance data recorded by an EDDS service provider may originate from a data recording from field diagnostic instruments or from other types of data collection devices used by a data registry authorized user. To use this data input alternative, the registration provider must apply to the California Energy Commission (CEC) according to the applicable requirements of 2019 Reference Joint Appendix JA7 to use an EDDS service. This is a new option provided by the *2019 Building Energy Efficiency Standards* (Energy Code).

Overview

Staff reviews applications from the registration provider to demonstrate compliance with EDDS requirements under the data registry provisions in JA7.8 either as a full data registry application (JA7.8.3.1) or as an amendment to an existing approved data registry application (JA7.8.3.2).

Minimum Application Requirements

Table 1 summarizes the minimum required contents of a registration provider's application seeking to use an EDDS service provider. A detailed list of the requirements is provided in the EDDS application checklist included in Appendix B.

1 A "registration provider" is an organization that administers a data registry service that conforms to the requirements in Joint Reference Appendix JA7 and may conform to the guidance given in the *Data Registry Requirements Manual*.

2 An "authorized user" is a person who has a user account with a data registry and is required to provide their correct username and password in order to access the data registry. Data registry users may be required to provide professional licensure, certification or credential information, or other qualifying information as condition of receiving authority to provide signatures for certain types of documentation.

Table 1: EDDS Application Requirements

Reference Appendices	Titles	Summary Requirements
JA7.7.1.2	Digital Data Sources External to a Data Registry	A registration provider must apply to the CEC for approval to use an EDDS service as an alternative to manual keyed-in data entry (approval process is provided by section JA7.8).
JA7.7.1.2.1 (a) – (j)	EDDS Data Exchange Requirements	Specifies the requirements for the data uploads to an EDDS database, the data exchange between the data registry and the EDDS, and other requirements for the EDDS that the registration provider must provide to ensure compliance.
JA7.7.1.2.2	EDDS Types	EDDS may include but are not limited to three basic types of services: diagnostic instrument manufacturer services, third-party quality control programs, or internet-based datastores. The data registry application must describe the EDDS service type.
JA7.8	Data Registry Approval	The approval process for the data registry includes requirements for staff to perform acceptance testing of the EDDS service. This acceptance test will be part of the verification of all requirements in JA7.7.1.
JA7.8.1	[Approval] Overview	The approval process for the data registry includes a “self-testing” requirement. The application will include self-testing results of the EDDS data exchange.
JA7.8.2.6	Disclosure of Contractual Agreements with EDDS	If a registration provider chooses to use a third-party EDDS service provider, a working agreement or contract must be executed between the registration provider and an EDDS services provider before applying to the CEC for approval.

Source: California Energy Commission, Standards Compliance Office

ConSol Home Energy Efficiency Rating Services, Inc.

On October 14, 2019, ConSol Home Energy Efficiency Rating Services, Inc. (CHEERS) was approved by the CEC as a registration provider under the 2019 Energy Code. CHEERS is one of two organizations approved by the CEC as a registration provider.

CHEERS applied to use an EDDS and amend the CHEERS data registry on June 16, 2021, with EDDS service provider Energy. The CEC executive director found the application complete with all required information on August 31, 2021. CHEERS submitted additional information and revisions to the application on November 19, 2021, to address staff's evaluation for compliance. Further revisions were submitted by CHEERS on December 10, 2021, to amend the list of compliance documents that will use data from the EDDS.

To make the application available for public review and comment, a staff report³ summarizing the application without revealing any confidential information was published. A public comment period and staff workshop were held to gather additional information from interested stakeholders to inform staff's review and evaluation of the EDDS application. No public comments were received.

The approval process for the data registry includes requirements for staff to perform acceptance testing of the EDDS service. Acceptance testing is necessary to verify that the EDDS meets the applicable requirements in JA7. To meet this requirement, a live demonstration of the EDDS features and functionality was performed by CHEERS and Energy to staff. More information on the live demonstration is included in Chapter 2.

Evaluation and Success Criteria

The application described in detail each of the following compliance elements to provide staff with the necessary means to evaluate the application and the ability of the registration provider to successfully satisfy the regulatory requirements. Staff evaluated the detailed description of the compliance elements based on the Energy Code requirements and incorporation into the existing registration provider program including the available training for authorized users, validating and reporting compliance documentation for authorities having jurisdiction, and quality assurance programs enforced by the registration provider.

1. The application described the full procedure of the data exchange from the point of view of the authorized user, including the necessary training. The application also described how the data entry system will effectively limit the EDDS data exchange to authorized users (JA7.7.1.2.1[a]), how the data registry will effectively protect against falsified data entry via the data exchange (JA7.7.1.2.1[d]), and how the trained authorized user will review the data to be exchanged prior to signature (JA7.7.1.2.1[c]).
2. The application described the full procedure to gather, store, verify, and exchange data from the point of view of the EDDS service provider, and included a full description of any field data gathering or testing equipment, how it is used, what training is required, and what anti-tampering protections are employed. The application described how the EDDS will ensure only trained and authorized users will have access to the data gathering equipment and EDDS data storage systems (JA7.7.1.2.1[a] and [e]), and the

³ Wong, Daniel. 2021. *ConSol Home Energy Efficiency Rating Services: Application to Use the Energy BOSS External Digital Data Source*. California Energy Commission. Publication Number: CEC-400-2021-017-SF. Available at <https://efiling.energy.ca.gov/GetDocument.aspx?tn=240943&DocumentContentId=74794>

means by which the authorized user will upload the field data to the EDDS data storage system (JA7.7.1.2.1[b] and [g]).

3. The application described standardized industry best practices used for EDDS data input, storage, and transmittal, why they are applicable, and specifically how the registration provider and EDDS service provider respective systems comply (JA7.7.1.2.1[f]).
4. The application included a description of the self-testing procedures of the data exchange for each of the applicable compliance documents and data fields, the argument for why the applicant believes the procedures are satisfactory, the results of self-testing (JA7.8.1), and a description of the entire process from data input to the EDDS to final signature on the compliance document (JA7.7.1.2.1[h]).
5. The application included documentation disclosing the details of all contractual agreements with the EDDS service provider (JA7.8.2.6).
6. Upon request, the applicant provided a live demonstration of the EDDS features in an appropriate setting to securely gather, store, and transfer compliance data to the data registry. Staff used a checklist (Appendix C) to observe and evaluate the demonstration of each compliance document optioned for EDDS data entry (Appendix D).

Staff has determined that the proposed EDDS service outlined in the application satisfy the requirements of the 2019 Energy Code and 2019 Reference Appendices. Staff recommends approval of the CHEERS application to use the Energy BOSS EDDS.

CHAPTER 2:

CHEERS EDDS Application Evaluation

This chapter separates the EDDS application evaluation into four main sections according to the applicable requirements in Reference Joint Appendix JA7:

- EDDS data exchange requirement
- EDDS type requirement
- Acceptance testing requirement
- EDDS application requirement

Each section includes a summary of the requirement that must be met, summary of the relevant sections in the application as they pertain to the requirement, and staff assessment of whether the application satisfies the requirement.

EDDS Data Exchange Requirements

JA7.7.1.2.1 specifies the requirements for data uploads to an EDDS database, data exchange between the data registry and the EDDS, and other requirements for the EDDS that the registration provider must meet to ensure compliance. The EDDS application must describe how these data exchange requirements will be met.

The following summarizes the data exchange requirements in JA7.7.1.2.1(a) through (i):

- Only authorized users can initiate data exchange between the EDDS and data registry.
- The data exchange must not be an unattended automatic process.
- Authorized users can review and revise the information transmitted to the data registry from the EDDS prior to making electronic signature controls available to the user.
- The registration provider shall be responsible for managing the security and integrity of the data exchange with the EDDS.
- The registration provider shall ensure that user data uploads to the EDDS, and storage and maintenance of compliance data in the EDDS are done using best practices for secure data exchange and secure data storage.
- The registration provider shall ensure that the data exchange processes that import data into the Data Registry from the EDDS are performed using best practices for secure data exchange.
- The user's compliance data may be uploaded automatically to an EDDS datastore or it may be keyed in by the user using an EDDS services software user interface.

- The data transmitted from an EDDS to a data registry shall conform to the XML schema⁴ for each respective compliance document for which the data are to be used. All data provided to complete compliance documents shall be subjected to data validation by the data registry after the data are transmitted to the data registry.
- Compliance document schemas approved by the CEC shall be made available to the EDDS services providers.
- Additional guidance for interfacing with and managing EDDS technical features may be given in the *Data Registry Requirements Manual*.⁵

Summary of Proposed Data Exchange Procedures in the Application

In response to the data exchange requirements in JA7.7.1.2.1, the application included a detailed description of the data exchange procedures for the proposed EDDS. The detailed description addresses how the requirements in JA7.7.1.2.1 (a) through (j) will be met. The following summarizes the proposed data exchange procedures included in the application for each data exchange requirement in JA7.7.1.2.1 (a) through (j).

- Authorized users must login to the CHEERS data registry to initiate data exchange. The user must enter their data registry authorized user credentials to login to the data registry user interface. The data exchange feature is available in the data registry user interface, allowing the user to initiate data exchange from the EDDS to the data registry (JA7.7.1.2.1[a]).
- Data exchange between the EDDS and data registry does not occur until the user has logged into the CHEERS data registry and manually initiates the data exchange from within the data registry user interface (JA7.7.1.2.1[b]).
- Authorized users can review and revise the transmitted data from the data registry user interface and digitally sign the compliance documentation. Subsequently, the data are submitted to the compliance report generator for digital signing and registration. (JA7.7.1.2.1[c]).
- CHEERS is responsible for managing the security and integrity of the data exchange between EDDS and the data registry. CHEERS requires use of encryption protocols for secure communications and data transfer between the EDDS and data registry (JA7.7.1.2.1[d]). At the request of staff, additional information was submitted to clarify the specific encryption protocols that will be used for secure communications.
- The EDDS uses industry standard encryption protocols for secure data upload to the EDDS. EDDS data servers also use industry standard encryption protocols for secure data storage. The EDDS service and database are hosted on cloud platforms that conform to industry standard security compliance programs, and implement security

⁴ Data validation rules or specifications are defined in the XML schema that represents the compliance data for compliance documents. The XML schema standardize the organization of the data, terminology, and data types, thus supporting data integrity and providing built-in data validation. The XML schema are published and approved by the CEC.

⁵ California Energy Commission staff. *2019 Data Registry Requirements Manual*. June 2020. Publication Number: CEC-400-2018-022-CMF. Available at <https://www.energy.ca.gov/sites/default/files/2021-06/CEC-400-2018-022-CMF.pdf>

measures such as virtual private networks, user access management, regular data backups, and implementation of firewalls to prevent intrusion (JA7.7.1.2.1[e]). At the request of staff, additional information was submitted to clarify the specific encryption protocols that will be used for secure communications.

- The EDDS service provider and data registry provider follows security best practices to ensure data security and integrity. These include best practices for information technology administration, access management, data backups, employee education, and implementation of security software (JA7.7.1.2.1[f]). At the request of staff, additional information was submitted to clarify best practices performed by the EDDS service provider. This additional information includes clarification on user account passwords, data backup procedures, access management, and remote access protocols.
- Project information and compliance data can be entered into the EDDS user interface using keyed-in data entry from a computer or mobile device (JA7.7.1.2.1[g]).
- The data registry provider certifies that the approved CEC XML schemas have been made available to the EDDS service provider. The data registry provider certifies that the transmitted data from the EDDS to the data registry conform to the approved CEC XML schema for each compliance document for which the data are to be used. Data transmitted from the EDDS to the data registry is validated by the data registry against the CEC-approved XML schema (JA7.7.1.2.1[h] and JA7.7.1.2.1[i]).

Staff Assessment

Staff evaluated the EDDS data exchange procedures included in the application according to the requirements in JA7.7.1.2.1 of the 2019 Reference Joint Appendix JA7. The application included detailed descriptions of the data exchange procedures, including the full process for gathering, storing, transmitting, and validating compliance data sent from the EDDS to the data registry. The application also described the best practices for data security and integrity to demonstrate compliance with the requirements.

Staff has found that the proposed data exchange procedures satisfy the requirements in JA7.7.1.2.1. Table 2 summarizes the application’s compliance with the requirements.

Table 2: Summary of EDDS Data Exchange Compliance

Requirement	Application Location(s)	Staff Assessment
Data exchange by authorized user JA7.7.1.2.1(a)	CHEERS application to use Energuy BOSS EDDS – pages 9 and 10 (confidential)	Complies
Data exchange JA7.7.1.2.1(b)	CHEERS application to use Energuy BOSS EDDS – page 10 (confidential)	Complies
Authorized user final review JA7.7.1.2.1(c)	CHEERS application to use Energuy BOSS EDDS – pages 10 and 11 (confidential)	Complies

Requirement	Application Location(s)	Staff Assessment
EDDS data exchange security and integrity JA7.7.1.2.1(d)	CHEERS application to use Energy BOSS EDDS – pages 11 through 13 (confidential) CHEERS application response for additional information submitted on 11/19/2021 (confidential)	Complies
EDDS data capture, storage, and upload security and integrity JA7.7.1.2.1(e)	CHEERS application to use Energy BOSS EDDS – pages 13 and 14 (confidential) CHEERS application response for additional information submitted on 11/19/2021 (confidential)	Complies
Data exchange best practices JA7.7.1.2.1(f)	CHEERS application to use Energy BOSS EDDS – pages 14 and 15 (confidential) CHEERS application response for additional information submitted on 11/19/2021 (confidential)	Complies
Data entry JA7.7.1.2.1(g)	CHEERS application to use Energy BOSS EDDS – pages 15 through 19 (confidential)	Complies
Data validation JA7.7.1.2.1(h)	CHEERS application to use Energy BOSS EDDS – page 19 (confidential)	Complies
XML schemas made available to EDDS service providers JA7.7.1.2.1(i)	CHEERS application to use Energy BOSS EDDS – page 5 (confidential)	Complies

Source: California Energy Commission, Standards Compliance Office

EDDS Types Requirement

According to JA7.7.1.2.2, EDDS may include but are not limited to three basic types of services: diagnostic instrument manufacturer services, third-party quality control programs, or internet-based datastores. The application must identify and describe the proposed EDDS type.

Summary of Proposed EDDS Type

The application included a detailed description of the proposed EDDS type, including descriptions of the EDDS functionality and the full procedures for using the EDDS to gather, store, validate, and transfer data to the data registry.

The proposed EDDS type is an internet-based datastore and software user interface that allows authorized users to input compliance data into the EDDS using keyed-in data entry from a computer or mobile device and transmit the data to the data registry.

Staff Assessment

Staff evaluated the EDDS type description according to the requirements in JA7.7.1.2.2 of the 2019 Reference Joint Appendix JA7. Staff has found that the proposed EDDS type satisfies the requirements in JA7.7.1.2.2. Table 3 summarizes the application’s compliance with the requirements.

Table 3: Summary of EDDS Service Type Compliance

Requirement	Application Location(s)	Staff Assessment
JA7.7.1.2.2	CHEERS application to use Energy BOSS EDDS – pages 5 and 6 (confidential)	Complies

Source: California Energy Commission, Standards Compliance Office

Acceptance Testing Requirement

According to JA7.8, staff must perform acceptance testing of the EDDS service as part of the approval process for a data registry.

Acceptance testing is necessary to verify that the proposed EDDS and data registry features and functionality comply with applicable requirements in JA7. To perform the acceptance testing for the data registry to use an EDDS, the registration provider shall perform a live demonstration of the EDDS service in a laboratory or field setting securely gathering and storing actual data, and securely transferring those compliance data to the data registry. Staff will use a live demonstration checklist (Appendix C) to observe and evaluate the demonstration of each compliance document optioned for EDDS data input.

Live Demonstration of EDDS Features

CHEERS and Energy performed live demonstrations of the Energy BOSS EDDS service on December 2, 2021, and December 9, 2021. CHEERS and Energy successfully demonstrated to staff the use of the EDDS and data registry to securely gather and store compliance data, securely transfer compliance data to the data registry, review and revise transmitted compliance data, validate compliance data, and sign and complete registered compliance documentation. Each compliance document optioned for EDDS data input was demonstrated.

Staff Assessment

Staff observed and evaluated the live demonstration of each compliance document optioned for EDDS data input (Appendix D) according to the requirements in the 2019 Reference Joint Appendix JA7. Staff verified that the EDDS and data registry features and functionality demonstrated is consistent with the features and functionality identified in the application and complies with the applicable requirements in JA7. The completed live demonstration checklist is included in Appendix C. Staff has found that live demonstration satisfies the acceptance

testing requirements in JA7.8. Table 4 summarizes the application’s compliance with the requirements.

Table 4: Summary of EDDS Acceptance Testing Compliance

Requirement	Application Location(s)	Staff Assessment
CEC Acceptance Testing JA7.8	EDDS live demonstrations held on 12/2/2021 and 12/9/2021 Live demonstration evaluation checklist (Appendix C) List of Compliance Documents Using Transmitted Data From the EDDS (Appendix D)	Complies

Source: California Energy Commission, Standards Compliance Office

EDDS Application Requirements

Applications for approval must conform to all applicable requirements given in JA7.8. JA7.8 allows two approval paths for the registration provider application: full approval before the CEC at a business meeting or streamlined approval for amendments and revisions to an existing data registry for which full approval is not required.

Full Approval

Full approval is required when major changes are made to a data registry's functionality, security, or technology features that necessitate acceptance testing of more than 30 percent of the compliance document templates used in a CEC approved data registry per JA7.8.3.1.

Full approval ensures the data registry conforms to all applicable requirements for functionality and security in JA7 including:

- Capability to produce and manage registered documents (JA7.5).
- Electronic signature capability and manage authorization of users (JA7.6.3.2.1).
- Document data validation (JA7.6.3.2.2).
- Signer review and signature actions (JA7.6.3.2.3).
- Digital signature and digital certificate actions (JA7.6.3.2.4).
- Capability to transmit secured documents and data to the Commission Compliance Document Repository (JA7.6.3.2.5).
- Document retention capability (JA7.6.3.2.6).
- Capability to receive and process electronic data using best practices for secure data exchange, using data sources and procedures approved by the CEC for registering compliance documents (JA7.6.3.2.7, JA7.7).
- Capability for data exchange with the compliance report generation services made available by the CEC to generate formatted electronic documents (JA7.2, JA7.7).

Streamlined Approval

Amendments and revisions to an existing data registry for which full approval by the CEC is not required may be approved by the executive director through a streamlined process specified in JA7.8.3.2.

Changes that qualify for streamlined approval include minor changes to the data registry document registration procedures, data input specifications and procedures, or registered compliance document output.

Any application for amendment or revision to an existing data registry must be accompanied by a cover letter explaining the type of amendment or revision requested and any applicable documents that are necessary to fully describe and justify the proposed amendment or revision.

All items listed in the application checklist in section JA7.8.2 that are applicable to the proposed amendment or revision must be submitted. The application checklist requirements include:

- A statement from the registration provider applicant certifying the reliability and accuracy of the data registry when used for registration of compliance documents according to the requirements of Energy Code section 10-103(a) and JA7.
- The registration provider must perform self-testing of the data exchange features proposed for approval and confirm that the data exchange from the EDDS to the data registry provides accurate information to all applicable compliance document data fields for each compliance document for which the EDDS is proposed to be used for data input.
- The registration provider must submit an addendum to the user manual describing the changes to the registry. The user manual must include instructions describing use of the data registry user interface and EDDS user interface for EDDS data input procedures.
- Username and password information must be provided to allow access to the data registry for staff to perform acceptance testing of data registry functionality.
- The registration provider's digital signature public key⁶ must be made available such that the digital signature on registered documents produced by the data registry can be tested.
- Data registry approvals must conform to all applicable requirements and procedures specified in sections 10-109 and 10-110 of the Energy Code.
- Documentation disclosing the details of the working agreements or contracts between the registration provider and EDDS services entity must be provided. This documentation must include descriptions of the parties involved, and the technologies used for the data exchanges between the EDDS and the data registry.

Summary of Application Items Submitted

The application conforms to the requirements for streamlined approval in JA7.8.3.2. CHEERS requests streamlined approval of the application stating that the proposed amendment to use an EDDS is for an existing data registry that has already received full approval under the 2019 Energy Code.

The application does not meet the conditions requiring full approval as specified in JA7.8.3.1. The proposed EDDS service will provide an alternative to keyed-in data entry for 19 of the 134 residential compliance documents, thus necessitating acceptance testing of 30 percent or less (14 percent) of compliance document templates used in a CEC approved data registry. As a result, the application may be approved via the streamlined approval process outlined in JA7.8.3.2.

⁶ A "public key" is one of the keys in asymmetric key encryption used in a digital signature. Asymmetric key encryption uses a pair of keys that are mathematically related: one key for encryption and another key for decryption. In digital signature processing, a user is assigned a private key that is not shared with anyone, and a public key that is given to anyone who receives digitally signed material from the user. As its name implies, the public key must be made public to receivers of digitally signed documents to decrypt the message digest.

The application includes all items required by JA7.8 including the application checklist items in JA7.8.2. The following is a summary of each item included in the application:

- A cover letter addressed to the CEC executive director describing the proposed changes to the CHEERS data registry for use of an EDDS from EDDS service provider Energygy (JA7.8).
- A signed application certification statement certifying that the CHEERS data registry is reliable and accurate when used for registration of compliance documents according to the requirements of Energy Code section 10-103(a) and JA7 (JA7.8.2.1).
- Summary of self-testing procedures performed to confirm that the data exchange from the EDDS to the data registry provides accurate information to all applicable compliance document data field for each compliance document for which the EDDS is proposed to be used for data input. Self-testing included verification of data input using the EDDS user interface, data transmission from the EDDS to the data registry, and generation of registered compliance documents through the standard procedures of the data registry (including the use of the CEC report generator). The data registry provider and EDDS service provider state that each compliance document has passed self-testing (JA7.8.2.2). At the request of staff, additional information was submitted to further clarify the self-testing procedures conducted. This additional information includes the specific steps taken by CHEERS and the EDDS service provider to test and verify EDDS and data registry functionality.
- The data registry user manual includes instructions for use of the data registry user interface for EDDS data input procedures (JA7.8.2.3). EDDS user instructions are also included for use of the EDDS user interface for gathering and transmitting data (JA7.8.5.5).
- User account access has been provided to CEC staff to perform acceptance testing of data registry functionality. The registration provider's digital signature public key is included in the application to allow staff to test the digital signature on registered documents produced by the data registry (JA7.8.2.4).
- The application conforms to the applicable requirements in sections 10-109 and 10-110 of the 2019 Energy Code.
- The full working agreement is included in the application. The executed working agreement indicates the parties involved in the working agreement and certifies that all requirements for data exchange in JA7.7.1.2.1 have been met. It also summarizes the specifications of the proposed EDDS service, including a procedural description of the proposed EDDS service; summary of industry standard security features and best practices utilized by the EDDS service provider and CHEERS; and a summary of the technologies and software used by the EDDS service and data registry. The working agreement is signed by the EDDS services provider and CHEERS (JA7.8.2.6).

Staff Assessment

Staff evaluated the EDDS application according to the requirements in JA7.8 of the 2019 Reference Joint Appendix JA7. Staff has found that all applicable items have been submitted and satisfy the application requirements in JA7.8. Table 5 summarizes the application's compliance with the requirements.

Table 5: Summary of EDDS Application Compliance

Requirement	Application Location(s)	Staff Assessment
Cover Letter JA7.8.3.2	CHEERS application to use Energuy BOSS EDDS – page 1 (confidential)	Complies
Application Certification Statement JA7.8.2.1	CHEERS application to use Energuy BOSS EDDS – page 6 (confidential)	Complies
Self-test results JA7.8.2.2	CHEERS application to use Energuy BOSS EDDS – Appendix A (confidential) CHEERS application response for additional information submitted on 11/19/2021 (confidential)	Complies
User manuals JA7.8.2.3, JA7.8.5.5	CHEERS application to use Energuy BOSS EDDS – Appendix C (confidential)	Complies
Data registry user account access JA7.8.2.4	CHEERS application to use Energuy BOSS EDDS – Appendix C (confidential)	Complies
Application fee and other administrative requirements JA7.8.2.5	CHEERS application to use Energuy BOSS EDDS – page 8 (confidential)	Complies
Disclosure of contractual agreements JA7.8.2.6	CHEERS application to use Energuy BOSS EDDS – Appendix B and Appendix E (confidential)	Complies

Source: California Energy Commission, Standards Compliance Office

CHAPTER 3:

Staff Recommendations

Staff has evaluated the complete EDDS application, additional information, and live demonstration of the EDDS features. Based on these evaluations, staff has found that the application complies with all applicable requirements in the 2019 Energy Code. Staff recommends that the executive director approve the CHEERS application to use the Energy Guy BOSS EDDS service.

APPENDIX A:

Glossary

TERM	DEFINITION
Authorized user	An authorized user is a person who has a user account with a data registry and is required to provide their correct username and password to access the data registry. Data registry users may be required to provide professional licensure, certification or credential information, or other qualifying information as condition of receiving authority to provide signatures for certain types of documentation.
California Energy Commission CEC	The California Energy Commission is the state's primary energy policy and planning agency.
CF1R, CF2R, and CF3R	Compliance documents (forms): certificate of compliance (CF1R), certificate of installation (CF2R), and certificate of acceptance or verification (CF3R). These compliance documents are required to be completed and submitted to the Authorities Having Jurisdiction at various points during the project life cycle.
ConSol Home Energy Efficiency Rating Service, Inc. CHEERS	CHEERS is an approved registry provider under the 2019 Energy Code.
Data Registry	Data registry is a web service with a user interface and database maintained by a registration provider that complies with the applicable requirements in Appendix JA7, with guidance from the Data Registry Requirements Manual, and provides for registration of residential or nonresidential compliance documentation used for demonstrating compliance with Title 24, Part 6.

TERM	DEFINITION
External Digital Data Source EDDS	A data transfer service approved by the CEC to operate in conjunction with an approved data registry that allows authorized users to transfer data from a digital data source outside the data registry as an alternative to the key-in data entry for registering compliance documents.
Energy Code	California Building Energy Efficiency Standards, California Building Code Title 24, Part 1, Chapter 10 and Part 6
Home Energy Rating System HERS	HERS is the California Home Energy Rating System as described in Title 20, Chapter 4, Article 8, section 1670. The HERS Program consists of providers that train and certify raters to perform whole-house ratings as well as field verification and diagnostic testing as a third-party to the contractor on a construction project. The providers and raters are responsible for registering the testing results in the provider's data registry.
Joint Appendix JA	A supplementary code to the Building Energy Efficiency Standards.
Registration Provider	A registration provider is an organization that administers a data registry service that conforms to the requirements in Joint Appendix JA7 and may conform to the guidance given in the <i>Data Registry Requirements Manual</i> .
Extensible Markup Language Schema XML Schema	XML Schema refers to XML Schema Definition Language, commonly referred to as XSD, which is another standard defined by the World Wide Web Consortium. An XML schema uses XSD to define a set of rules to which an XML document must conform to be considered valid according to that schema. The rules can include definitions of major organizational units, definitions of data elements and attributes data types, constraints on valid values such as upper and lower bounds, and a determination whether data are required or optional.

APPENDIX B: EDDS Application Checklist

The [EDDS Application Checklist](https://efiling.energy.ca.gov/GetDocument.aspx?tn=234639-2&DocumentContentId=67487) is available on the California Energy Commission Docket 19-HERS-01 (<https://efiling.energy.ca.gov/GetDocument.aspx?tn=234639-2&DocumentContentId=67487>). The checklist is filed under docket number TN234639-2.

APPENDIX C:

Live Demonstration Checklist

Staff completed a live demonstration checklist to evaluate the features of the EDDS for each compliance document that uses EDDS data input. The live demonstrations were held on December 2, 2021, and December 9, 2021. The completed checklist follows.

PASS	Elements	Benchmark/Example
<input checked="" type="checkbox"/>	EDDS data capture, storage, and upload security and integrity JA7.7.1.2.1(e)	The user logs into their EDDS user account with username and password before inputting compliance data into the EDDS user interface.
<input checked="" type="checkbox"/>	EDDS upload options JA7.7.1.2.1(g)	Compliance data are manually keyed-in by the user using an EDDS service software user interface.
<input checked="" type="checkbox"/>	Data entry by authorized user JA7.7.1.2.1(a)	Only the authorized user can initiate the data exchange between the EDDS and data registry.
<input checked="" type="checkbox"/>	Data entry by authorized user JA7.7.1.2.1(a)	The authorized user logs into their data registry user account with username and password before initiating data exchange between EDDS and data registry.
<input checked="" type="checkbox"/>	Data entry by authorized user JA7.7.1.2.1(a)	The authorized user is limited to using the data exchange feature managed and made available by the data registry user interface.
<input checked="" type="checkbox"/>	Data entry by authorized user JA7.7.1.2.1(a)	The authorized user can initiate the data exchange between the EDDS and data registry only while logged into the data registry.
<input checked="" type="checkbox"/>	Data exchange JA7.7.1.2.1(b)	The authorized user initiates data exchange from the EDDS to the data registry. Data exchange between the EDDS and data registry does not occur through an unattended automatic process.
<input checked="" type="checkbox"/>	Data validation JA7.7.1.2.1(h)	Transmitted data from EDDS to the data registry conform to the XML schema for each compliance document for which data are to be used.

PASS	Elements	Benchmark/Example
<input checked="" type="checkbox"/>	Data validation JA7.7.1.2.1(h)	All transmitted data provided to complete compliance documents are subjected to data validation by the data registry software after the data are transmitted to the data registry.
<input checked="" type="checkbox"/>	Data validation JA7.7.1.2.1(h)	Transmitted data that do not conform to the XML schema does not pass data registry validation and cannot be used to complete compliance documentation.
<input checked="" type="checkbox"/>	Authorized user final review JA7.7.1.2.1(c)	The authorized user is prevented from executing the final signature without an opportunity to review and revise the information transmitted to the data registry.
<input checked="" type="checkbox"/>	Produce compliance document JA7.7.1.2.1(h)	The authorized user is able to submit the compliance data from the EDDS data exchange through the data registry system to the report generator and produce a valid, registered compliance document.

Source: California Energy Commission, Standards Compliance Office

APPENDIX D:

List of Compliance Documents Using Transmitted Data From the EDDS

The following is the list of the residential compliance documents that will use compliance data transmitted from the proposed EDDS to the data registry.

Document Name	Document Title
CF1R-ALT-02-E	Alterations to Space Conditioning Systems
CF2R-MCH-01b-E	Space Conditioning System – Prescriptive Alteration
CF2R-MCH-20a-H	Duct Leakage Diagnostic Test – Completely New Duct System
CF2R-MCH-20d-H	Duct Leakage Diagnostic Test – Complete Replacement or Altered Duct System
CF2R-MCH-20e-H	Duct Leakage Diagnostic Test – Sealing Accessible Leaks
CF2R-MCH-22a-H	Space Conditioning System Fan Efficacy – Newly Installed Non-Zoned Systems or Zoned Multi-Speed Compressor
CF2R-MCH-23a-H	Space Conditioning System Airflow Rate – Newly Installed Non-Zoned Systems or Zoned Multi-Speed Compressor
CF2R-MCH-23c-H	Space Conditioning System Airflow Rate – Alternative to Compliance with Minimum System Airflow Requirements for Altered Systems
CF2R-MCH-25b-H	Refrigerant Charge Verification – Subcooling Method
CF2R-MCH-25c-H	Refrigerant Charge Verification – Weigh in Observation Procedure
CF2R-MCH-25f-E	Refrigerant Charge Verification – New Package Unit with Factory Charge
CF3R-MCH-20a-H	Duct Leakage Diagnostic Test – Completely New Duct System
CF3R-MCH-20d-H	Duct Leakage Diagnostic Test – Complete Replacement or Altered Duct System
CF3R-MCH-20e-H	Duct Leakage Diagnostic Test – Sealing Accessible Leaks
CF3R-MCH-22a-H	Space Conditioning System Fan Efficacy – Newly Installed Non-Zoned Systems or Zoned Multi-Speed Compressor
CF3R-MCH-23a-H	Space Conditioning System Airflow Rate – Newly Installed Non-Zoned Systems or Zoned Multi-Speed Compressor
CF3R-MCH-23c-H	Space Conditioning System Airflow Rate – Alternative to Compliance with Minimum System Airflow Requirements for Altered Systems
CF3R-MCH-25b-H	Refrigerant Charge Verification – Subcooling Method
CF3R-MCH-25c-H	Refrigerant Charge Verification – Weigh in Observation Procedure

Source: California Energy Commission, Standards Compliance Office