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Comments of the Center for Sustainable Energy® regarding the October 25, 2022, Meeting of the Secretary of Energy Advisory Board

The Center for Sustainable Energy® (CSE) appreciates the opportunity to provide comments to Secretary Granholm and the members of the Secretary of Energy Advisory Board (SEAB). CSE provides recommendations regarding the collection, analysis, and utilization of data from programs overseen by the Department of Energy (DOE). Leveraging program data will enable DOE to conduct effective grid resiliency planning and make data-driven decisions regarding future grid needs and the efficacy of its programs.

CSE is a national nonprofit that is transforming markets for clean transportation and distributed energy resources (DERs) through software-enabled, data driven incentive program administration, forecasting and planning software, and unique data offerings derived from project data sets. CSE administers cutting-edge incentive programs valued at over $4 billion for governments, utilities, and the private sector across the United States. CSE's independence and data-driven approach have made it a trusted resource and partner for over 25 years.

CSE highlights the critical importance of collecting and utilizing program data, which can enable effective grid planning, enhance program implementation, and ensure the optimal expenditure of public funds. The recent passage of major climate legislation accompanied by the influx of federal funds make this an ideal moment for DOE to enact unified data collection standards and protocols. Accordingly, CSE offers the following recommendations:

1. Adopt standardized, harmonized, and enforceable data collection protocols.
2. Employ a scalable data warehouse to store, aggregate, and analyze program performance data and inform planning efforts.
3. Utilize interactive dashboards to ensure program progress, enhance program efficiency, and empower community decision-making.

CSE's responses are discussed in detail below.

1. Adopt standardized, harmonized, and enforceable data collection protocols.

CSE highlights the importance of adopting robust data collection protocols to effectively evaluate federal programs and enhance future planning efforts. To ensure consistency in assessing impacts across state and federal programs, CSE recommends the DOE seek to standardize data collection requirements across federal programs and harmonize with existing state programs, where possible. Enacting unified requirements will facilitate program evaluation, prevent duplicative or inconsistent datasets, and leverage standards that have already been adopted and demonstrated success at the state level. CSE has submitted comments on the importance of standardized data collection requirements across several state and federal venues, including the Federal Highway Administration's (FHWA) proposed rulemaking regarding minimum standards for the National Electric Vehicle Infrastructure (NEVI) Formula Program,[1] the California Energy Commission's (CEC) public process for implementing NEVI funding,[2] and the New York State Climate Action Council's Draft Scoping Plan to implement The Climate Leadership and Community Protection Act.[3]

CSE recommends the DOE adopt detailed and standardized data collection and reporting protocols for federal programs. This will ensure that all data is submitted in a consistent manner that streamlines data transfer, storage, and analysis. Specifically, CSE recommends that data collection protocols be designed to specify the data fields, categories, and desired data types (i.e., decimals, integers, hash keys, etc.) to be collected. While CSE acknowledges that private entities are often reluctant to share data, CSE contends that the reporting of operational data is currently a key condition of receiving grant funding for many state and federal programs. Additionally, protocols exist to aggregate and anonymize private data, which alleviates any concerns regarding the divulgence of proprietary information.

As an example of a detailed and standardized data collection protocol, CSE highlights the existing data collection protocol adopted for the California Electric Vehicle Infrastructure Project (CALeVIP), which is implemented by CSE on behalf of the CEC. Funded at $750 million, CALeVIP is the largest electric vehicle (EV) infrastructure incentive program in the country and has invested over $183 million in incentive funding across every region of California since

[1] Federal Highway Administration, Comment from Center for Sustainable Energy (CSE). https://www.regulations.gov/comment/FHWA-2022-0008-0296
[2] California Energy Commission, Docket 22-EVI-05, TN 246259. https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=22-EVI-05
[3] New York State, Climate Action Council Draft Scoping Plan. https://climate.ny.gov/Our-Climate-Act/Draft-Scoping-Plan

2017.[4] The data collection protocol for CALeVIP, which was developed by CSE in coordination with the CEC, details specific data fields and categories to be collected, as specified in Appendix A of these comments.[5] The EV charger utilization data collected under CALeVIP will be used to develop charging usage profiles and accompanying load curves, which can then be used to inform grid planning and anticipate potential resiliency issues. CSE notes that the CALeVIP data collection requirements have already been agreed to by the major electric vehicle service providers (EVSPs), several of which have begun to submit data to CSE.

In addition to data collection standards, CSE recommends the DOE adopt detailed and standardized data transfer protocols, data request documents, and template data sharing agreements. Data transfer protocols can specify which data transfer methods to utilize, including application programming interfaces (APIs), secure file transfer protocols (SFTPs), or secure portal access to the EVSPs' data repository. Data request documents can specify data fields, categories, and types to be collected, which will ensure consistently formatted data across a wide pool of grant recipients. Template data sharing agreements can be helpful in articulating the roles and responsibilities of each entity involved in data transfers. These agreements can include information on efforts to ensure that proprietary information is protected by aggregating and anonymizing data and employing security protocols such as data encryption. CSE suggests these agreements be developed in conjunction with public and private entities and circulated prior to issuing funding, to ensure coordination on requirements and facilitate the timely distribution of funds.

2. Employ a scalable data warehouse to store, aggregate, and analyze program performance data and inform planning efforts.

CSE recommends the DOE employ a secure and scalable data warehouse to facilitate the long-term storage, aggregation, and analysis of data from all U.S. states and territories, including EV charger data collected under the NEVI Formula Program. A data warehouse can function as a centralized repository for ingesting significant amounts (i.e., gigabytes) of data and storing this information over the course of a program and beyond. Storing data in a centralized location can also facilitate program evaluation. For example, utilizing warehouses for EV infrastructure programs can enable targeted evaluations of EV charger utilization and reliability at the individual site level, while also comparing charging behavior across location types, EV charger types, and use cases. This information can then be used to develop charging usage profiles and

[4] California Energy Commission, CALeVIP Rebate Statistics Dashboard. https://calevip.org/rebate-statistics

[5] See Appendix A, beginning on page 7 of this document.

accompanying load curves, which will enhance program design and inform grid resiliency planning.

CSE recommends that the data warehouse be accompanied by standardized data collection protocols (such as the CALeVIP data collection protocol discussed above) and have the capacity to clean, standardize, and validate incoming data. Specifically, CSE suggests the warehouse be designed with automated protocols to clean data by identifying and sorting outliers, standardize data by converting it into a consistent format, and validate data by assessing whether the data conforms to the specified requirements. These protocols will ensure that all data, regardless of the source, transfer method, or individual site characteristics, can be stored, analyzed, and visualized consistently and without additional preparation. CSE also recommends the warehouse include a data access portal to allow state and federal agencies to easily access the data.

As part of CSE's implementation of CALeVIP, CSE has developed a data warehouse to facilitate data collection, storage, and analysis. CSE's data warehouse includes the following capabilities:

- Automated ETL (extract, transform and load) process for data ingestion, validation and storage;
- Standardized relational data structure optimized for storing charger equipment, interval, session, and reliability data;
- Data protection protocols using Amazon's Cloud Security Services; and
- Live data connection to an interactive data visualization dashboard.

3. Utilize interactive dashboards to ensure program progress, enhance program efficiency, and empower community decision-making.

CSE recommends that the data collected in the warehouse be used to generate interactive dashboards. CSE suggests all dashboards include key performance indicators (KPIs) to quantify progress towards program goals and be interactive to promote ongoing transparent stakeholder engagement. CSE highlights the use of dashboards to achieve three key objectives: (1) Ensure progress towards program goals; (2) Enhance program operations by highlighting equipment reliability and maintenance needs; and (3) Empower community engagement and decision-making. Examples for each of these objectives as they relate to EV infrastructure programs are provided below.

First, dashboards can be developed to track progress towards program goals. For example, dashboards for EV infrastructure programs like CALeVIP can show information on the number

of chargers deployed, real-time status of funding (i.e., whether funding is available, reserved, or complete), site-level statistics regarding different EV charger types (such as Level 2 chargers or direct current fast chargers), charger characteristics (such as uptime, utilization, energy capacity, energy dispensed, etc.), location types, (such as public buildings, national parks, parking facilities, retail, and lodging) and equipment specifications (including make and model) being funded. As an example, CSE highlights the CALeVIP Rebate Statistics Dashboard.[6] Dashboards can also incorporate geographic information system (GIS) overlays to develop maps that visualize distribution of funded equipment, performance, and power and energy consumption across regions.

Second, dashboards can be used to operationalize program performance goals and ensure adequate operation and maintenance of publicly-funded equipment. For example, the NEVI Program includes a proposed reliability requirement for charging ports to have a minimum annual uptime of above 97 percent.[7] Dashboards can verify that these reliability goals are being met on an ongoing basis by taking uptime information from data warehouses and relaying it to third-parties responsible for charger maintenance in a timely manner. Equipment reliability is especially important in the EV context given consumer concerns around range anxiety and unavailable chargers. Addressing these concerns using data-driven operations and maintenance will promote widespread consumer acceptance and adoption of EVs.

Third, dashboards can be developed to promote community engagement and empower local decision-making. To better understand and support the needs of communities, CSE encourages the use of interactive public dashboards that clearly demonstrate what projects are being funded, where these projects are located, how the equipment is performing, and how much funding has been allocated. This information can provide insights on how future funding can be disbursed to ensure equitable impacts. These dashboards can also help identify and prioritize unique community needs, such as the need for public chargers near multifamily properties or areas with higher energy burdens or health disparities that should be prioritized for electrification and energy efficiency. Lastly, CSE recommends that community needs be verified through targeted engagement, including in-person and virtual outreach via community meetings, surveys, and webinars. This approach was used as part of the development of Louisiana's NEVI deployment plan, which was prepared with assistance from CSE and Louisiana

[6] California Energy Commission, CALeVIP Rebate Statistics Dashboard. https://calevip.org/rebate-statistics

[7] Federal Highway Administration, Notice of proposed rulemaking, Section 680.116(b). https://www.regulations.gov/document/FHWA-2022-0008-0001

Clean Fuels. To realize the full vision of Justice40, data visualizing program compliance must be readily available and accessible to communities.

Conclusion

CSE appreciates the opportunity to provide comments to Secretary Granholm and the SEAB members. CSE supports the efforts of the DOE in overseeing federal clean transportation and DER programs. The collection, analysis, and use of data from these efforts will help ensure efficient and equitable deployment of these public funds. CSE looks forward to continued engagement in the implementation of these initiatives.

Sincerely,

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Appendix A: CALeVIP Data Collection Protocol

The desired EV charging utilization data fields are organized into the following entity types:

- Sites (aka Stations)
- EVSEs
- Ports
- Charging Sessions
- Interval Data

Sites/Stations: (desired attributes, but not limited to)

- Site ID
- Site Name
- Site Type
- EVSP Name
- Street Address
- City
- State
- ZipCode
- Latitude
- Longitude
- Number of EVSEs
- Number of Ports

EVSEs: (desired attributes, but not limited to)

- EVSE ID
- Site ID
- EVSE Manufacturer
- EVSE Model Number
- EVSE Maximum kW
- EVSE Number of Ports
- EVSE Power Level

Ports: (desired attributes, but not limited to)

- Port ID
- EVSE ID
- Site ID
- Port Maximum kW
- Connector Types Available

Charging Sessions: (desired attributes, but not limited to)

- Session ID
- Site ID
- EVSE ID
- Port ID
- Connector Type
- Charge Duration (HH:MM:SS)
- Charge Session Start Date
- Charge Session Start Time
- Charge Session End Date
- Charge Session End Time
- Disconnect Reason
- Connection Duration (HH:MM:SS)
- Idle Duration (HH:MM:SS)
- Energy Consumed kWh
- Charge Peak Demand kW
- Charge Average Demand kW
- Total Transacted Amount ($)
- Payment Method
- Vehicle Make
- Vehicle Model
- Vehicle Year
- Vehicle Type

Interval Data: (desired attributes, but not limited to)

- Interval ID
- Session ID
- Port ID
- Location Name
- Interval Start Date
- Interval Start Time
- Interval End Date
- Interval End Time
- Interval Energy Consumed kWh
- Interval Peak Demand kW
- Interval Average Demand kW
- Interval Duration

Downtime Events: (characterize station reliability)

- Site ID
- EVSE ID

- Port ID
- Downtime Reason
- Event Start Date
- Event Start Time
- Event End Date
- Event End Time