CERTIFICATION PROPOSAL

WILDCAT ENERGY STORAGE PROJECT FOR RIVERSIDE COUNTY AND IMPERIAL COUNTY, CALIFORNIA

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INDEX

EXECUTIVE SUMMARY

WILDCAT ENERGY STORAGE PROJECT FOR RIVERSIDE COUNTY AND IMPERIAL COUNTY, CALIFORNIA

Project:

The project consists of the design, construction, and operation of a 1.5-megawatt alternating current (MW_{AC}) energy storage system with an energy storage capacity of 6 megawatt-hours (MWh) located in Palm Springs, California (the "Project"),[1] which will provide resource adequacy benefits.[2] Electricity from the grid will be stored and delivered to the Southern California Edison (SCE) distribution system via the existing nearby Eisenhower substation. The resource adequacy benefits will be purchased by SCE pursuant to a 9.5-year energy storage resource adequacy agreement (ESRA). The Project will be financed as part of a portfolio facility of energy storage projects totaling 128.5 MW with a storage capacity of nearly 450 MWh (the "Portfolio").

In March 2020, the Board of Directors approved a US$6.8 million loan for the construction of one of the Portfolio projects located within the jurisdiction of the Bank—the Don Lee Energy Storage System in Escondido, California—and that same month NADB executed a US$5.0 million loan agreement with the borrower and four other lenders participating in the Portfolio financing. In December 2020, NADB and the other lenders were notified that the Don Lee Project had been cancelled, as the sponsor was unable to resolve unforeseen issues related to increased costs stemming from building upgrades to the project site necessary to comply with fire and seismic codes and was unable to find a suitable site replacement in time.

Given these circumstances and the high importance of supporting the advancement of energy storage technology as a way to fulfill its environmental mission, NADB is proposing to replace the Don Lee project by certifying another project in the Portfolio, the Wildcat Project, which will benefit residents of Riverside County and Imperial County, California, both of which are located within the Bank's geographic jurisdiction.

[1] The energy storage capacity expands from 6 MWh to 12 MWh during the contract tenor as assitional phases are built into the Project.
[2] Resource adequacy refers to the ability of an electricity provider's energy supply capacity to always serve its customers' demand under all but the most extreme conditions.

Objective:	The purpose of the Project is to increase the energy storage capacity of the California grid, which will allow the system operator to reduce the use of ramp-up/ramp-down fossil fuel power generation plants to manage the grid more efficiently. In addition, the Project will also help integrate electricity generated by intermittent renewable energy sources, such as solar and wind, and support a more efficient and reliable power grid to minimize power disruptions, reducing energy losses resulting from mismatches in supply and demand.
Expected Outcomes:	The Project will be developed in four different phases, reaching a maximum capacity of 3 MW_{AC} and a storage level of up to 12 MWh, by 2026. The NADB loan will support only the construction of a first phase comprising an installed capacity of 1.5 MW_{AC} with a storage level of up to at least 6 MWh. During first year of operations, the anticipated outcomes of the Project are: a) Reduction of approximately 819 metric tons/year of carbon dioxide (CO_2).[3] b) Storing and delivering up to 1,796 MWh of energy output per year for frequency control purposes.[4]
Sponsor:	esVolta, LP.
Borrower:	esFaraday, LLC.
NADB Loan Amount:	Up to US$4.73 million but not to exceed total eligible construction costs.[5]

[3] CO_2 calculations are based on the potential emissions avoided as a result of charging and discharging 1,796 MWh/year of electricity during the first year of operations for frequency control purposes that would otherwise be supplied by natural gas-fired power plants and on the emission factor for natural gas plants for the state of California calculated by NADB based on information reported by the U.S. Energy Information Administration and the California Energy Commission. The emission factor is: 0.456089 metric tons/megawatt-hour (MWh) for CO_2. Although SO_2 and NOx emissions reduction are expected, the emission factors are nearly zero.

[4] Estimation based on information in the ESRA and data received from the Sponsor. The Project is expected to complete the equivalent of one charge/discharge cycle (6 MWh) per day and has an AC-DC-AC conversion ratio of 0.82. Frequency control is a process to maintain stability in the power system. In power systems, when the demand is higher than the supplying power, the frequency in the system will drop. In a similar manner, when the demand is lower than the supplying power, the frequency in the system will increase.

[5] Per NADB Loan Policies (May 21, 2020), in the case of private corporate loans or loans with corporate guarantees that do not exceed USD $20 million, the Bank may finance up to 100% of project eligible costs provided the loans have an alternate source of payment or guarantee that demonstrates capacity for full repayment of the loan regardless of the ability of the project to generate revenue. In the case of the Wildcat Project, the alternative source of payment is the portfolio of projects and related equity contribution.

CERTIFICATION PROPOSAL

WILDCAT STORAGE PROJECT FOR RIVERSIDE COUNTY AND IMPERIAL COUNTY IN PALM SPRINGS, CALIFORNIA

1. PROJECT OBJECTIVE AND EXPECTED OUTCOMES

The project consists of the design, construction, and operation of the first phase of a 3.0-megawatt alternating current (MW_{AC}) energy storage system located in Palm Springs, California (the "Project"), which will provide resource adequacy benefits. Electricity from the grid will be stored and delivered to the Southern California Edison (SCE) distribution system via the existing Eisenhower substation. The resource adequacy benefits will be purchased by SCE pursuant to a 9.5-year energy storage resource adequacy agreement (ESRA), which gives SCE the right to control and optimize the dispatch of the Project. The Project is being financed as part of a portfolio facility of energy storage projects totaling 128.5 MW (the "Portfolio").

The purpose of the Project is to increase the energy storage capacity of the California grid, which will allow the system operator to reduce the use of ramp-up/ramp-down fossil fuel power generating plants to manage the grid more efficiently, thus benefitting residents of Riverside and Imperial Counties. At the end of the first phase, the Project is expected to store and deliver up to 1,796 megawatt-hours (MWh) of energy a year, mainly for frequency control purposes. As a result, it will displace the emission of an estimated 819 metric tons/year of carbon dioxide (CO_2). In addition, the Project will help integrate electricity generated by intermittent renewable energy sources, such as solar and wind, and support a more efficient and reliable power grid to minimize power disruptions, reduce energy losses resulting from mismatches in supply and demand.

2. ELIGIBILITY

2.1. Project Type

The Project falls into the eligible category of energy efficiency.

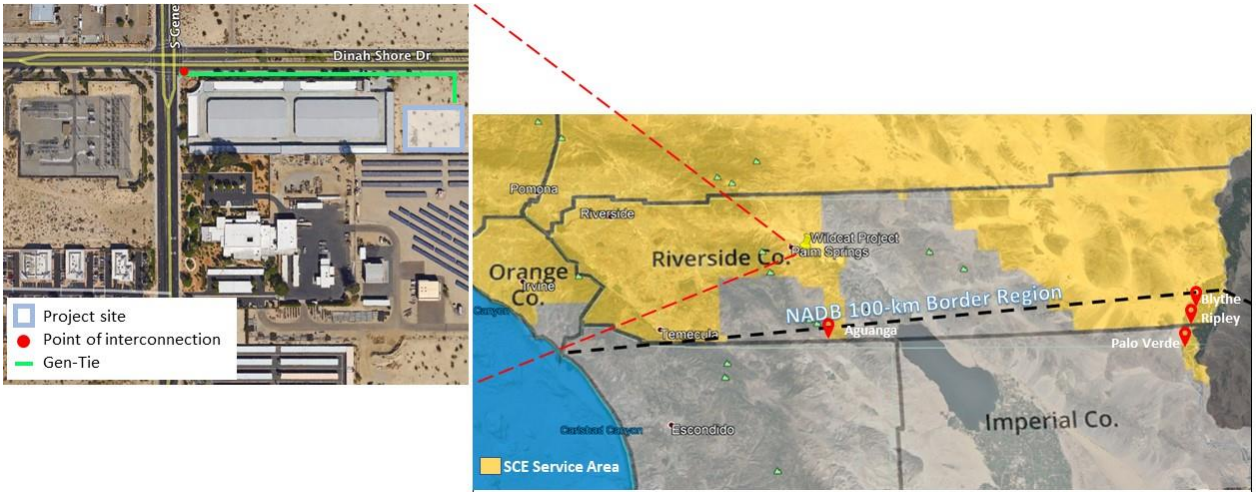
2.2. Project Location

The Project is being constructed in the south-central region of the state of California in the city of Palm Springs, in Riverside County approximately 83 miles (133 km) north of the U.S.-Mexico

border. The Project site is located at the following coordinates: latitude 33°48'24.68" and longitude 116°29'31.37".

Although the project is located just outside the NADB's 100-km (62-mile) jurisdiction, it will support the reliability requirements of the grid in the southern region of California served by SCE, which overlaps with NADB's jurisdiction in portions of Riverside County and Imperial County. The communities within NADB's jurisdiction and SCE's service area are Aguanga, Blythe, Ripley and Palo Verde, with a combined population of 22,559.[6] Figure 1 illustrates the geographical location of the Project, as well as the overlap of the SCE service area with NADB's jurisdiction. Although the impacts of energy storage projects benefit the energy system in general, the benefits of the Wildcat project will largely be realized in an area nearer to its site.

Figure 1
PROJECT LOCATION MAP



2.3. Project Sponsor and Legal Authority

The private-sector project sponsor is esVolta, LP (the "Sponsor"), which established esFaraday, LLC (the "Borrower") as a holding company for the portfolio of individual projects, including Wildcat I Energy Storage, LLC. esFaraday, a Delaware limited-liability company, incorporated on July 30, 2019 with the legal authority to develop the Project along with six other projects being financed through the Portfolio debt facility.

[6] Source: 2010 U.S. Census

3. CERTIFICATION CRITERIA

3.1. Technical Criteria

3.1.1. General Community Profile

According to the U.S. Census Bureau, the estimated population of Riverside County in 2019 was 2,470,546, which represented 6.3% of the state population.[7] The main economic activities of Riverside County are: educational services, healthcare, and social assistance (21.0%); professional, scientific, management, administrative and waste services (13.7%); retail trade (10.5%); arts, entertainment, recreation, accommodation and food services (10.4%); manufacturing (9.1%); construction (6.3%); and transportation, water, housing and utilities (5.3%).[8] The communities in Riverside County that lie within NADB's jurisdiction and SCE's service area are Aguanga, Blythe, Ripley and Palo Verde in California, with a combined population of 22,559.

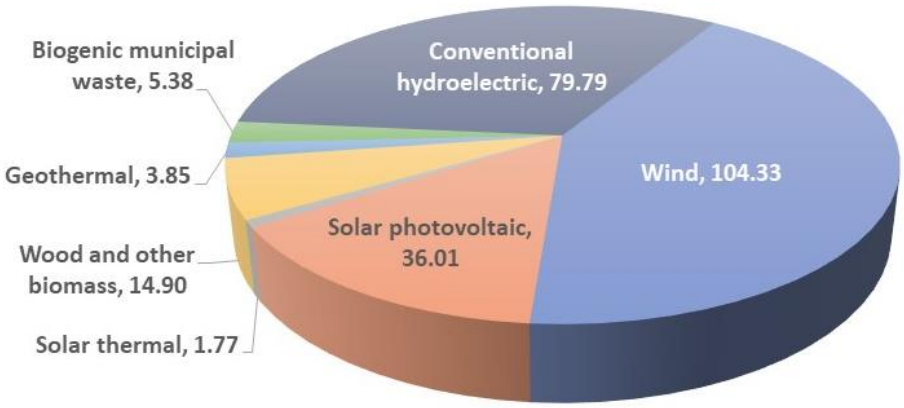
Local Energy Profile

According to U.S. Energy Information Administration (EIA), growing renewable energy use and the implementation of policies that encourage the use of renewables at the state level (renewable portfolio standards) and at the federal level (production and investment tax credits) have driven down the cost of renewable energy facilities, supporting their expanded adoption.[9] The share of U.S. electricity generation from renewable sources has been increasing in recent years, going from 10% in 2010 to 18% in 2018, which is partially the result of rapid declines in cost.[10] The EIA expects electricity generation from renewable energy sources to continue to rise, from 20% in 2020 to 21% in 2021 and to 23% in 2022.

Net renewable capacity and net generation from renewable energy sources in the U.S. during 2019 are shown in Figures 2 and 3, respectively. Renewable electric generating technologies account for almost 60% of the approximately 1,000 gigawatts of cumulative capacity additions projected in the EIA's Annual Energy Outlook 2021.

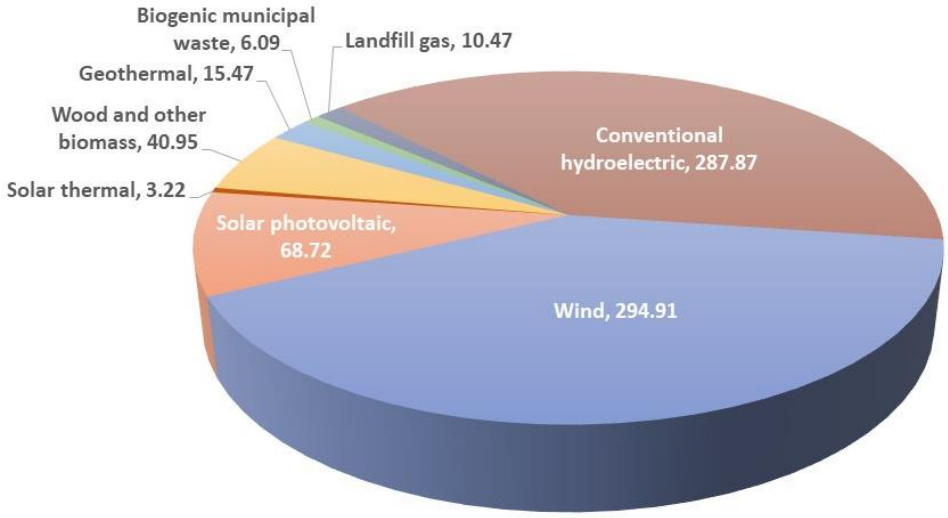
[7] Source: U.S. Census Bureau (https://www.census.gov).
[8] Source: U.S. Census Bureau, American Community Survey 2019 (https://www.census.gov).
[9] Source: U.S. Energy Information Administration, Annual Energy Outlook, 2021.
[10] Source: U.S. Energy Information Administration.

Figure 2
U.S. NET RENEWABLE CAPACITY IN 2019
(Gigawatts)



Biogenic municipal waste includes municipal waste, landfill gas and municipal sewage sludge.
Source: Chart prepared by NADB based on statistics from EIA.

Figure 3
U.S. NET GENERATION FROM RENEWABLE SOURCES IN 2019
(Millions of MWh)



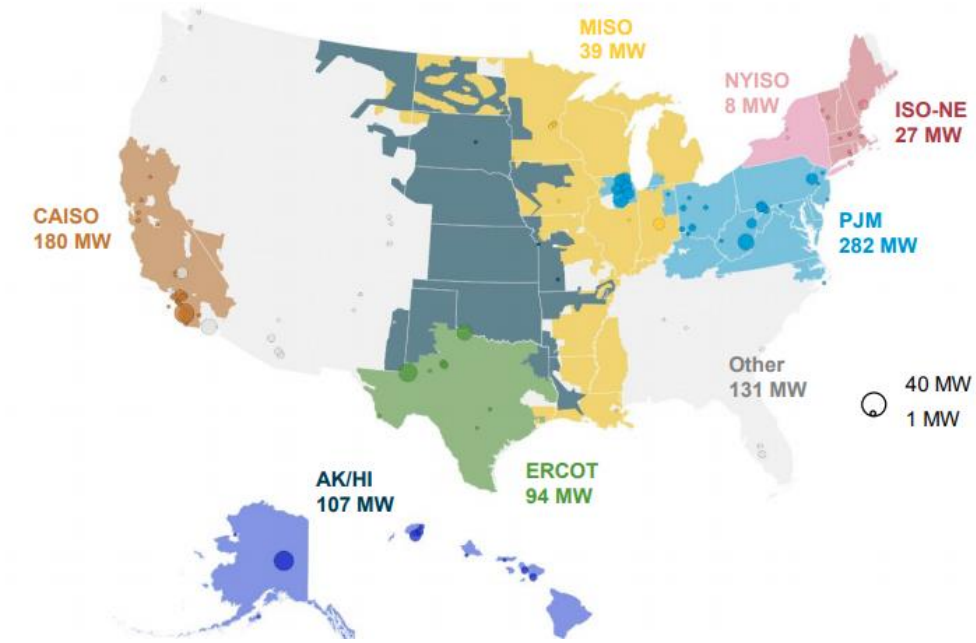
Source: Chart prepared by NADB based on statistics from EIA.

In July 2020, the EIA published the U.S. Battery Storage Market Trends report. According to the report, large-scale battery storage power capacity has grown at an average compound rate of nearly 40% since 2010 in the United States, reaching 869 MW in operation in 2018.[11] Figure 4

[11] Large-scale refers to systems that are grid connected and have a nameplate power capacity greater than 1 MW.

shows the location and power capacity in MW of large-scale battery storage facilities in the U.S. in 2018.[12]

Figure 4
U.S. LARGE SCALE BATTERY STORAGE INSTALLATIONS BY REGION (2018)



Source: U.S. Energy Information Administration | US. Battery Storage Market Trends

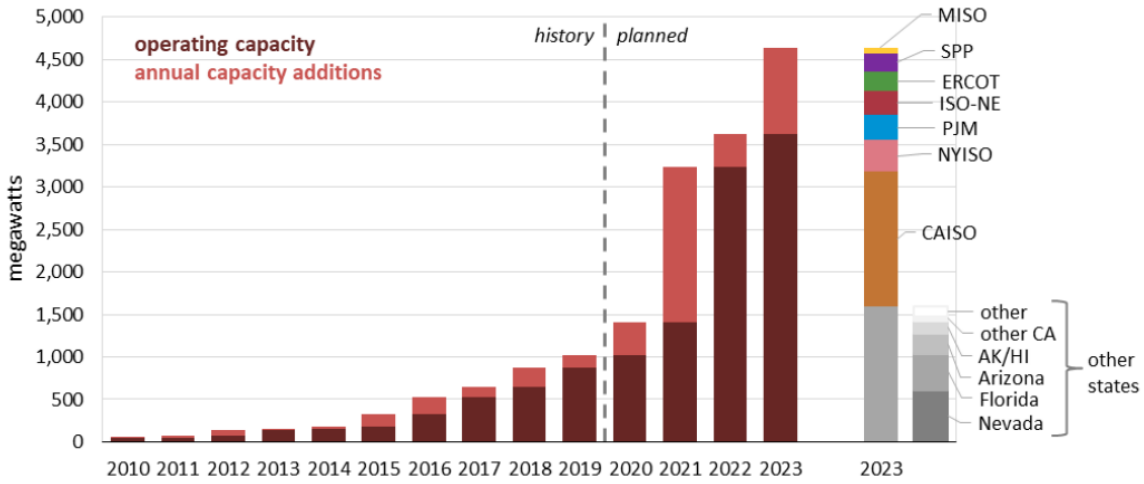
As shown in Figure 4, about 73% of large-scale battery storage capacity in the United States is installed in the regions covered by five of the seven organized independent system operators (ISOs) or regional transmission organizations (RTOs) and the non-contiguous states of Alaska and Hawaii (AK/HI).[13] The ISOs and RTOs depicted in Figure 4 account for 58% of total grid capacity in the United States and have the largest shares of storage capacity relative to their shares of installed grid capacity. The disproportionate share of large-scale battery storage across the ISOs and RTOs may result from differences in market design and state policies.

As of December 2019, project developers reported to EIA that they planned to make 3,616 MW of largescale battery storage operational in the United States between 2020 and 2023 (Figure 5). Given the short planning period required to install a storage facility, the planned capacity reported to EIA does not necessarily reflect all the storage that will be built over this period, but the

[12] Source: EIA, *Battery Storage in the United States: An Update on Market Trends*, July 2020.
[13] ISOs and RTOs are independent, federally regulated non-profit organizations that ensure reliability and optimize supply and demand bids for wholesale electric power.

estimates can be used as an indicator of trends.[14] EIA projects that the United States will have 17 GW of battery storage capacity by 2050.[15]

Figure 5
LARGE-SCALE BATTERY STORAGE CUMULATIVE POWER CAPACITY (2010-2023)



Source: U.S. Energy Information Administration, Battery Storage in the U.S: An Update on Market Trends. July 2020.

In the longer term, wind and solar growth are projected to support economic opportunities for storage systems that can provide several hours of storage and enable renewable generation produced during periods of high wind or solar output to supply electricity during periods of peak electricity demand.

The U.S. Department of Energy, through EIA, provides a state-by-state reference for information and data covering energy production and demand. Renewable resources, including hydropower and small-scale (less than 1 MW) customer-sited solar photovoltaics, supplied almost half of California's in-state electricity generation in 2019. Furthermore, the state of California increased by 2.9% its electricity generation from 194,842 GWh in 2018 to 200,475 GWh in 2019, which relied on a mix of energy technologies as shown in Table 1. California emitted 40.87 million metric tons of CO_2 from fossil fuel consumption in the electric power sector in 2019, representing 11.4% of the total CO_2 emissions of the state.[16]

[14] Source: U.S. Energy Information Administration, *Battery Storage in the United States: An Update on Market Trends,* July 2020.
[15] Source: Idem, p. 28.
[16] Source: EIA.

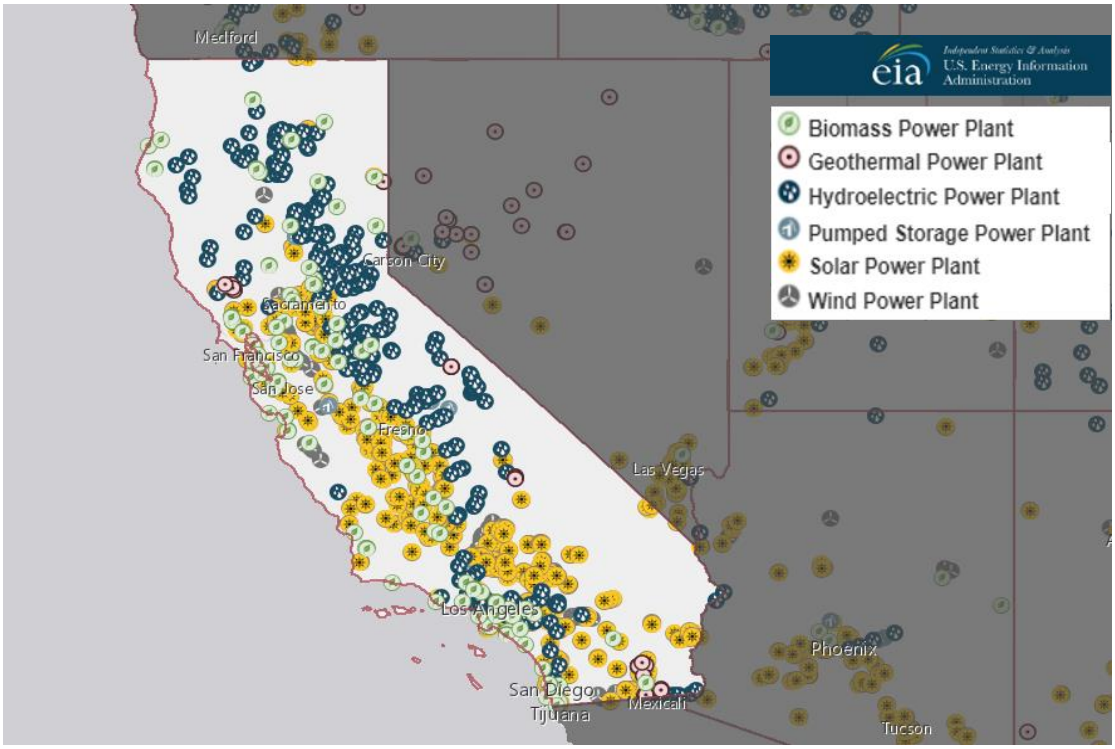
Table 1
CALIFORNIA POWER GENERATION IN 2019

Energy Source	Generation* (GWh)	Percentage (%)
Natural gas	86,136	42.97%
Large hydro	33,145	16.53%
Solar	28,513	14.22%
Nuclear	16,163	8.06%
Wind	13,680	6.82%
Geothermal	10,943	5.46%
Biomass	5,851	2.92%
Small hydroelectric	5,349	2.67%
Other	411	0.21%
Coal	248	0.12%
Oil	36	0.02%
Total	200,475	100.00%

* Source: Statistics from the California Energy Commission (2019).

California's renewable energy mix includes biomass, geothermal, hydroelectric, solar, wind and pump storage power plants, as shown in Figure 6.

Figure 6
CALIFORNIA RENEWABLE ENERGY POWER PLANTS (2020)



Source: EIA.

On February 15, 2018, the U.S. Federal Energy Regulatory Commission (FERC) issued FERC Order 841, which requires that all RTOs and ISOs amend market rules so that energy storage can participate across all services. The order seeks to remove barriers for energy storage participation in wholesale capacity, energy, and ancillary services markets. ISOs and RTOs have two years to implement the rule. Once implemented, the rule will enable energy storage to compete with other generators in the wholesale markets. This will encourage additional storage deployments and create new opportunities for energy storage.[17]

Battery energy storage facilities within the territory covered by CAISO accounted for 21% of existing U.S. large-scale battery storage power capacity in 2018. According to the EIA, CAISO had a total installed power storage capacity of 180 MW in 2018. The proposed Project will increase battery storage capacity in the CAISO jurisdiction by nearly 2%.

3.1.2. Project Scope

The Project consists of the design, construction, and operation of the first 1.5 MW_{AC} phase of a 3.0 MW_{AC}/6 MWh energy storage system that will occupy approximately 2,900 square feet of a total project area of approximately 15,670 square feet, located on 3.23 acres of vacant and undeveloped land in Palm Springs, California. The Sponsor secured the area through a 10-year lease agreement signed with the landowner, the Desert Water Authority, on May 21, 2018. The lease may be extended for two additional five-year terms and annually thereafter. The Project will be connected to the Eisenhower 115/12 kV substation, which is operated by SCE.

The Project includes the following components:

- *Battery cells*. The lithium-ion power cells will have a nominal capacity of up to 40 ampere-hour (Ah) with a working voltage of 3.2 Volts in direct current (V_{DC}).[18]

- *Battery module*. A typical battery module contains a total of 8 cells. A battery module controller is installed on each module to monitor the state of charge and its operational performance.

- *Battery pack*. A battery pack is made up of two battery modules. Each battery pack has its own controller to monitor the performance of the pack.

- *Battery stack*. A battery stack is comprised of 17 battery packs and a controller. Each battery stack is rated with a nominal capacity of 225 kilowatt-hours (kWh) and has a voltage range of 720-990 V_{DC}. A total of 30 battery stacks will be installed at the site. The stacks will be inside 8 x 40-feet shipping containers with 10 stacks each. The containers will be installed parallel to one another and will be raised on cement piers approximately 18 inches above a gravel base. The Phase 1 plan only includes two containers.

[17] Source: U.S. Energy Information Administration, U.S. Battery Storage Market Trends.
[18] An ampere-hour is used in measurements of electrochemical systems such as battery capacity. For example, an AA battery has a capacity of about 2 to 3 ampere-hours.

- *System controller*. Using a management software for system operation and control, the system controller interacts with metering devices, system hardware and stored electricity to regulate power. It accepts commands remotely from customer sites or can execute operations locally as defined by use cases in a program. Additionally, it can serve as an interface for maintenance.

- *Energy storage inverter*. The energy storage inverter is responsible for converting and conditioning power to and from the battery system. It transforms the direct current from the batteries into alternating current at 480 V_{AC}.

- *Transformer*. The transformer converts the electricity from 480 V_{AC} to 12 kV_{AC} to allow the system to receive and deliver electricity through the distribution line near the Project site.

- *Gen-Tie line*. The Project will interconnect to the Ike 12kV circuit of the Eisenhower 115/12 kV substation operated by SCE.

Figure 7 shows the location of the Project where the batteries will be installed, as well as the location of the point of interconnection ("POI") which is adjacent to the Project site. The Project will connect to the substation via underground wiring that would be installed under Dinah Shore Drive and extend from the Project site to the existing substation.

Figure 7
PROJECT SITE

Phase 1 Interconnection Study was completed on January 15, 2019 and the Project is in the late stage of its construction phase. The Generator Interconnection Agreement with SCE was executed on October 13, 2020.

3.1.3 Technical Feasibility

Lithium-Ion Phosphate (LiFePO4) technology is a common battery storage medium and is considered one of the safest, most easily understood, and efficient methods of energy storage on the market. It is the technology most used for this application given its high-cycle efficiency and fast-response time. The performance of the battery represents a favorable balance between cost, energy density, degradation, and life cycle, making it an optimal choice for stationary grid-tied energy storage solutions. At the end of 2018, the U.S. had 869 MW of power capacity, representing 1,236 MWh of energy capacity of large-scale battery storage, in operation, with over 90% provided by lithium-ion-based batteries.[19] In addition, their high energy density makes them the current battery of choice for the portable electronic and electric vehicle industries. Even more important, LiFePO4 is safer than commonly used lithium-ion alternatives (such as cobalt-based alternatives), ensuring safe and worry-free operations. Phosphate-based batteries virtually eliminate the risk of battery fire or explosion because of their high thermal runaway point as well as the environmental risk of cobalt entering the environment through improper disposal.

Potential suppliers were evaluated based on such elements as cost-effectiveness, contractual terms, warranties, and delivery times. The Sponsor selected Powin Energy, an energy storage and battery management solutions company, to supply the facility components, having determined that its equipment is best suited to the characteristics and requirements of the Project and offers the best performance.

The Sponsor contracted the services of an independent engineering firm to perform a technology assessment. The analysis included an evaluation of the characteristics, reliability, and performance of all the components of the system, as well as a power conversion analysis and a review of product certifications and supplier warranties, among other factors. The review concluded that the lithium-ion batteries selected for the Project can perform both the fast- and slow-response power applications required by the storage system. As part of their assessment, the batteries were tested to determine their storage capacity after a certain number of charge and discharge cycles. The tests concluded that the batteries selected for the Project can retain 80% of their capacity after 3,650 charge-discharge cycles, which is considered above average for this type of application.

3.1.4. Land Acquisition and Right-of-Way Requirements

The Sponsor applied for the Conditional Use Permit (CUP) on November 30, 2018. According to the justification letter submitted by the Sponsor to the City of Palm Springs, California, for issuance of the CUP, the Project will occupy approximately 2,900 square feet of a total project area of approximately 15,670 square feet located on a 3.2 acres of vacant land owned by the

[19] Source: U.S. Energy Information Administration, Battery Storage in the United States: An Update on Market Trends. July 2020.

Desert Water Authority. The Sponsor secured the area through a 10-year lease agreement signed on May 21, 2018, which may be extended for two additional years. The Sponsor consulted with the City early during the site design and planning process to ensure that the structural improvements are aesthetically consistent with the colors, materials, mass and scale of the surrounding land uses. Once operational, the unmanned, remotely monitored Project would involve only negligible air quality, noise and traffic impacts. Implementation of the Project on the site does not require any zoning variances and will comply with all development standards related to yards, setbacks, walls or fences, landscaping and other features required to adjust the Project to the surrounding land uses.

The proposed Project is being developed in the County of Riverside, California, in a site zoned as M-1 (Industrial), which allows activities such as research and development parks, light manufacturing, laboratories, and industrial services and is consistent with the uses intended by the Project. No additional right-of-way is required. The Sponsor is committed to complying with all agreed upon conditions of approval that address matters concerning public health, safety and general welfare. In addition, any future modifications to the Project site would be subject to the subsequent review and approval of the Planning Commission and City Council.

The CUP was obtained from the City of Palm Springs on October 23, 2019. The Palm Springs Planning Commission determined that the use of the site is appropriate under the zoning code and for the development of the community. According to the CUP, the size and shape of the site is adequate for its intended use.

3.1.5. Project Milestones

Construction of the Project began in February 2020, and the initial delivery date is expected by July 1, 2021. Table 2 presents the status of key milestones for Project implementation.

Table 2
PROJECT MILESTONES

Activity	Status
Land Lease Agreement for the Project	Completed (May 21, 2018)
ESRA with SCE	Completed (October 3, 2018)
Conditional Use Permit from the City of Palm Springs	Completed (October 23, 2019)
Construction start-up NTP	Completed (April 28, 2020)
Generation Interconnection Agreement with SCE	Completed (October 13, 2020)
Initial delivery date	Expected by July 1, 2021.

NADB procurement policies require that private-sector borrowers use appropriate procurement methods to ensure a sound selection of goods, works and services at fair market prices and that their capital investments are made in a cost-effective manner. As part of its due-diligence process, NADB confirmed compliance with this policy.

3.1.6. Management and Operation

esVolta develops, owns, and operates utility-scale energy storage projects in North America and has a portfolio of one operational project and six utility-contracted projects under development with a total installed capacity of about 128.5 MW with a storage capacity of nearly 450 MWh.

esVolta will act as asset manager and engaged Powin Energy to act as the operations and maintenance (O&M) provider for the Project.

3.2. Environmental Criteria

3.2.1. Environmental and Health Effects/Impacts

A. Existing Conditions

Historically, the United States has depended to a great extent on fossil fuels for the generation of energy. This conventional method of energy generation affects the natural environment due to harmful emissions related to the generation process, including greenhouse gases (GHG) and other pollutants, such as sulfur dioxide (SO_2) and nitrogen oxides (NOx). Consequently, there is a need for affordable and environmentally beneficial alternatives to conventional hydrocarbon-based energy sources.

In California, in 2019, a total of 40.8 million metric tons of CO_2 were emitted in conventional power plants related to the generation of electricity.[20] With the objective of reducing these emissions, California has established a series of policies and regulations. One of the most important is the Renewables Portfolio Standard (RPS) Program which mandated in 2002 an initial requirement that 20% of electricity retail sales be generated by renewable resources by 2017. The program was accelerated in 2015 to a 50% RPS by 2030. In addition, interim annual RPS targets with three-year compliance periods were established, along with a requirement that 65% of RPS procurement be derived from long-term contracts of 10 or more years. In 2018, the RPS was increased to 60% by 2030 and required that all the electricity in the state come from carbon-free resources by 2045.

In line with the policies mentioned, power generation from renewable sources has increased in the state of California. In 2018, solar and wind power plants generated almost 20% of the electricity consumed in California. Given the intermittent nature of renewable energy sources, grid operators must have the capability to regulate and maximize the efficient use of electricity generated by those sources. One of the simplest and most efficient solutions is the implementation of energy storage systems.

ISOs and RTOs—the independent, federally-regulated non-profit organizations that ensure service reliability and optimize supply and demand bids for wholesale electric power in the United States—must ensure that market rules do not unfairly preclude any resources from participating in the production of electricity, as enforced by FERC. Many existing market rules may not take into account the unique operating parameters and physical constraints of battery storage as both a

[20] Source: Source: U.S. Energy Information Administration.

consumer and producer of electricity. However, recent actions by FERC, ISOs and RTOs have begun to carve a path for storage to participate in their markets.

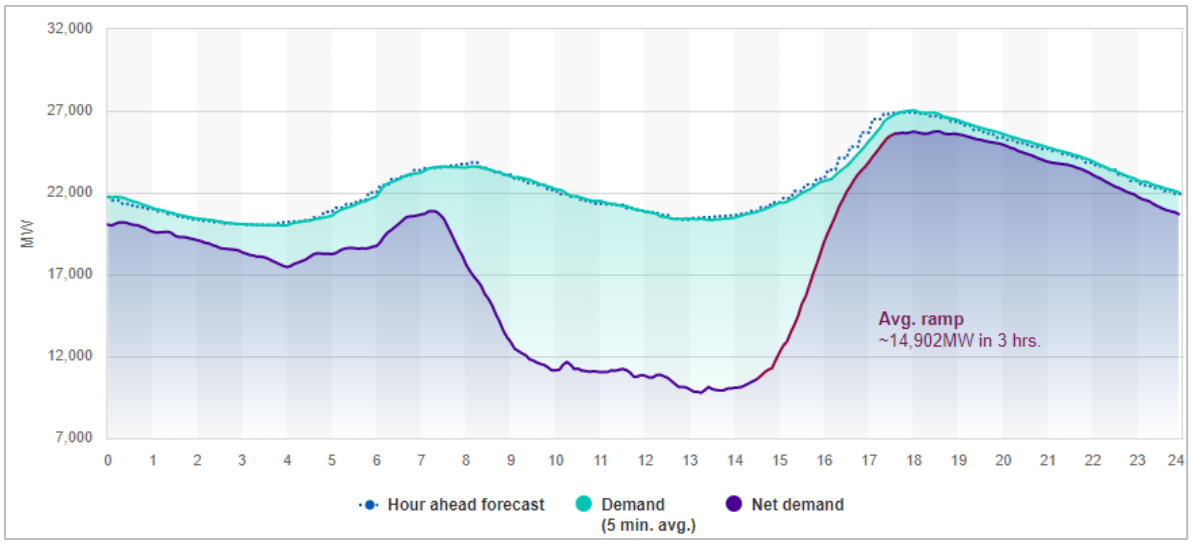
The State of California has been at the forefront for transitioning to sustainable, renewable energy sources. The state has seen significant growth in renewable energy in the past several years, particularly with solar installations more than doubling in recent years. The next step in this shift towards a more sustainable grid is energy storage technology. Incorporating intermittent resources such as wind and solar requires an accompanying portfolio of resources and contract provisions that provide operational flexibility to quickly change electricity production and consumption and maintain needed output levels for the time required. Energy storage resources are, by their very nature, flexible and thus support reliable, low-carbon grid operations.

The State has taken action to advance energy storage, including a new law and the resulting decision of the California Public Utilities Commission (CPUC) to establish an energy storage procurement target for Investor-Owned Utilities (IOUs) totaling 1,325 MW to be completed by the end of 2020, with the facilities fully implemented by 2024. To date the CPUC has approved procurement of more than 1,533 MW of new storage capacity to be built in the State. Of this total 506 MW are operational.[21] At the federal level, FERC Order No. 792 provides clarity by directing transmission providers to define electric storage devices as generating facilities, thereby enabling these resources to take advantage of generator interconnection procedures.

The transition to a low-carbon, and eventually zero-carbon grid provides challenges and opportunities, as the state of California incorporates increasing amounts of renewable energy on to the electric system. CAISO, as the electric system operator in most of California, is responsible to ensure service reliability and optimize supply and demand bids for wholesale electric power. For a grid to be stable, electricity supply should always exceed demand by a small percentage, but the greater the difference between supply and demand, the greater the cost-inefficiency of the grid. Figures 8 and 9 illustrate how the CAISO meets demand while managing the quickly changing ramp rates of variable energy resources, such as solar and wind.

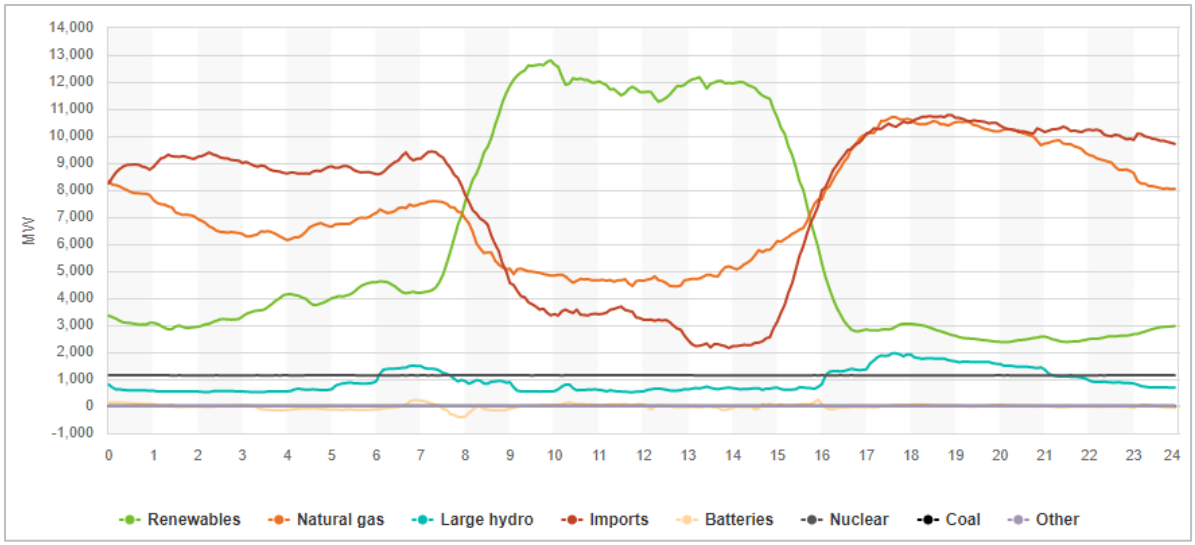
[21] Source: California Public Utilities Commission (CPUC)

Figure 8
CAISO's NET DEMAND



Source: California ISO Outlook as of December 31, 2020. Net demand is total demand less electricity produced by solar and wind.

Figure 9
CAISO'S SUPPLY MIX



Source: California ISO Outlook as of December 31, 2020.

As shown in Figure 9, as solar generation increases when the sun is shining, supply from natural gas-fired plants decreases, but given the intermittent nature of renewable energy sources, and the response times of conventional generation sources, supply always exceeds demand. Based on Figures 8 and 9, Table 3 shows the supply and demand in CAISO at different times of the day.

Table 3
CAISO'S DEMAND AND SUPPLY

Time	Supply (MW)	Demand (MW)	Difference (MW)
02:00	20,790	20,425	365
06:00	22,299	21,780	519
10:00	22,643	22,210	433
14:00	21,056	20,476	580
18:00	27,266	27,038	228
22:00	24,119	23,920	199

Source: California ISO Outlook as of December 31, 2020.

B. Project Impacts

Battery storage systems can reduce the use of regulation-up and regulation-down fossil fuel generating power plants that are needed as a result of constant changes of energy supply and demand. As a result, battery storage systems are often designed to optimize the delivery of power to the grid and improve its efficiency.[22]

The Project will provide resource adequacy benefits, thereby supporting the stability of the local electrical grid. The location of the Project is near the western terminus of SCE's service area, enabling its connection to the grid. The Project will also allow SCE to avoid expensive upgrades to the adjacent Eisenhower Substation and other related infrastructure like new distribution and transmission lines, while also improving system reliability and renewable energy integration in the surrounding area.

By increasing installed capacity of electricity storage systems, CAISO will be able to manage the grid more efficiently and to match electricity demand reducing the need more closely to ramp-up or down fossil fuel power generating plants. The anticipated environmental outcomes from the installation of a1.5 MW_{AC} battery energy storage system with the capacity to store up to 6 MWh of electricity per cycle, or 1,796 MWh per year include the reduction of approximately 819 metric tons/year of CO_2.[23]

Additionally, the charge-discharge capacity of energy storage also increases the capacity factor of existing resources. Battery storage helps smooth out the delivery of variable or intermittent resources such as wind and solar, by storing energy, delivering it when demand increases. As the energy supply mix becomes cleaner with low- and no-carbon resources, energy storage will help

[22] Grid efficiency is measured by the energy losses resulting from mismatches in supply and demand, where excess energy goes unused.
[23] CO_2 calculations are based on the potential emissions avoided as a result of charging and discharging 1,796 MWh/year of electricity for frequency control purposes that would otherwise be supplied by natural gas-fired power plants and on the emission factor for natural gas plants for the state of California calculated by NADB based on information reported by the U.S. Energy Information Administration and the California Energy Commission. The emission factor is: 0.456089 metric tons/megawatt-hour (MWh) for CO_2. Although SO_2 and NOx emissions reduction are expected, the emission factors are nearly zero.

the supply mix evolve more easily and reliably. Energy storage also supports the development of a more resilient grid by increasing the reliability and security of the energy supply for end users.

Additional benefits of battery storage systems are outlined below.

- Combining a renewable energy generator with an energy storage system provides constant power output over a certain period.
- Load management provides power reliability and maximizes renewable power consumption.
- Storing excess wind and solar generation reduces the rate of change of power output from a non-dispatchable generator (e.g., wind or solar) in order to comply with local grid codes related to grid stability or to prevent overproduction or overproduction penalties.
- Frequency regulation helps balance temporary differences between demand and supply, often in response to deviations in the interconnection frequency.
- Voltage support ensures the quality of power delivered by maintaining the local voltage within specified limits.
- Storing and delivering power to compensate for grid demand variations.
- Arbitrage occurs when batteries charge with inexpensive electrical energy and discharge when prices for electricity are high, also referred to as electrical energy time-shift.
- Backup power, following a failure of the grid, provides an active reserve of power and energy that can be used to energize transmission and distribution lines, provides start-up power for generators, or provides a reference frequency.
- Transmission and distribution deferral keep the loading of transmission or distribution system equipment lower than a specified maximum, which allows for delays or completely avoids the need to upgrade a transmission system or avoids congestion-related costs and charges.

C. Transboundary Impacts

No transboundary impacts are anticipated as a result of the development of the Project.

3.2.2. Compliance with Applicable Environmental Laws and Regulations

A. Environmental Clearance

The Project is being developed in the County of Riverside, California, in a site zoned as M-1 (Industrial), which allows activities such as research and development parks, light manufacturing, laboratories, and industrial services, which is consistent with the uses intended by the Project. Nevertheless, since the Project site is located on 3.2 acres of private land that is currently vacant and undeveloped, a CUP from the City of Palm Springs is required. The Sponsor applied for the CUP on November 30, 2018.

As part of the permitting process, the City prepared an Initial Study, which indicates that the Project site does not contain any significant trees, rock outcroppings, historic building or other significant aesthetic resources. Nor does it contain any streams, riparian habitat, marshes, protected wetlands, vernal pools or sensitive natural communities protected by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. Consequently, no endangered species are expected to occur on the Project site.

The Project site is located on Dinah Shore Drive, which is designated as an Enhanced Landscape Street in the City's General Plan, requiring special landscaping and setbacks to assure that enhanced landscaping treatments frame the views along important roadways. The Sponsor consulted with the City early during the site design and planning process to ensure that the structural improvements are aesthetically consistent with the colors, materials, mass and scale of the surrounding land uses. Moreover, once the facility is operational, the unmanned, remotely monitored Project will involve only negligible air quality, noise and traffic impacts.

At a public hearing on October 10, 2019, the Planning Commission of the City of Palm Springs considered a CUP application for the installation and operation of the Project. After reviewing the project under the provisions of the California Environmental Quality Act (CEQA), the Planning Commission adopted a Mitigated Negative Declaration and approved the CUP on October 23, 2019. The CUP determined that the use of the site is appropriate under the zoning code and for the development of the community. Moreover, implementation of the Project does not require any zoning variances and will comply with all development standards related to yards, setbacks, walls or fences, landscaping and other features required under to adjust the Project to the surrounding land uses. However, the mitigated negative declaration contained some requirements and conditions regarding Project construction and operation, which are described in the following section. The Sponsor is committed to complying with all agreed upon conditions of approval that address matters concerning public health, safety and general welfare. In addition, any future modifications to the Project site would be subject to the subsequent review and approval of the Planning Commission and City Council.

No other environmental clearance is required.

B. Mitigation Measures

In compliance with the requirements established under the CUP and Mitigated Negative Declaration of the City of Palm Springs, the Sponsor is taking the following actions regarding the implementation of the Project, as well as other standard mitigation measures.

- *Wildlife*. To avoid impacting nesting birds, the Sponsor will either avoid project-related disturbances during the nesting season (generally from January 15th through August 31st) or contract a qualified biologist to carry out pre-construction surveys immediately prior to on-site disturbance and vegetation removal during the nesting season. The implementation of preconstruction surveys will assure that impacts to nesting birds are reduced to less than significant levels.
- *Aesthetics*. To preserve the aesthetic quality of views along Dinah Shore Drive, the battery storage containers and associated equipment will be screened from public view by an architectural fence and vegetation, including lower-lying, drought-tolerant shrubs and

succulents/agaves. The landscaped setback is consistent with the General Plan standards for an Enhanced Landscape Street, ensuring that the impacts of the Project will be less than significant.

- *Lighting*. Limited sources of exterior lighting are being installed at the site as part of the Project for security, but since no occupied buildings are proposed, no ongoing or constant light sources are expected. Consistent with the standards of the Zoning Ordinance, on-site lighting will be shielded and directed downward, preventing light spillage. These new sources of light are not expected to substantially affect day or nighttime views in the project area.
- *Noise*. To comply with the Municipal Code, the Sponsor will screen any outdoor equipment, including inverters and switchgear. The screening material should be free from gaps or holes to ensure noise reduction. The Sponsor will comply with the construction schedules set by the Municipal Code.
- *Hazardous Materials*. The proposed Project is utilizing lithium-ion technology that has a long lifespan and boasts superior safety and stability characteristics. Additionally, the Sponsor expects to use the battery recycling program of Powin's primary cell supplier.
- *End of Life Battery Recycling*. As the O&M contractor and warrantor, Powin will be responsible for battery disposal, and the O&M Agreement will obligate Powin to dispose of battery materials in accordance with local regulation. The Sponsor expects to use the battery recycling program of Powin's primary cell supplier. In general, the recycling process entails technicians dismantling the battery packs and separating assembly pieces and circuitry from the actual battery cells. The separated packs are then fed by conveyor into an automated crusher. The crusher operates under a liquid solution to prevent fugitive emissions and to reduce potential chemical reactions of the processed batteries. It produces three types of material: metal solids, metal-enriched liquid, and plastic fluff. The metal solids typically contain various amounts of copper, aluminum and other materials that can be used as raw materials in new products. The metal-enriched liquid is solidified using filtering technology and is sent off-site for further metal purification.

C. Pending Environmental Tasks and Authorizations

There are no pending environmental authorizations to be obtained for the Project.

3.3. Financial Criteria

As previously explained, NADB is proposing to certify the Wildcat Project in order to replace the Don Lee Energy Storage Project that was approved by the Board in March 2020 but was later cancelled by the Sponsor due to significant, unforeseen cost increases. The Bank contracted a US$5.0-million loan to support the implementation of the Don Lee project and is proposing to apply up to US$4.73 million of that commitment to support the Wildcat Project, not to exceed the total eligible construction costs of the first phase of the Wildcat Project.

The financing for this Project has been structured under a Portfolio with additional projects that will provide revenue streams for the repayment of the loan. This payment mechanism is

consistent with the project finance structures currently used in the U.S. in the U.S. market. The source of payment will be the revenue generated by all the projects held by the Borrower company in the Portfolio in accordance with long-term power purchase agreements (PPAs) and sales in the spot market. NADB loan will have no recourse beyond the Borrower.

NADB performed a financial analysis of the sources of payment, the payment structure and the projected cash flows over the term of the loan. These cash flows are estimated to be sufficient to a) cover scheduled O&M expenses, b) fund any debt service reserve or cover the costs of a debt reserve letter of credit and c) pay the debt service on the Portfolio loan. The loan has been sized to comply with the required leverage and debt service coverage ratios.

In addition, NADB verified that the Borrower has the legal authority to contract financing and pledge its revenue for the payment of financial obligations, as well as the legal and financial capacity to operate and maintain the proper performance of the Portfolio projects. NADB has also verified that the projected O&M costs are in accordance with industry standards.

Considering the Project's characteristics and based on the financial and risk analyses performed, the proposed Project is considered financially feasible and presents an acceptable level of risk. Therefore, NADB proposes to continue participating in the Portfolio financing by using up to US$4.73 million of the original loan commitment provided for the Don Lee Project to finance the first phase of the Wildcat Project, without exceeding the total eligible construction costs.

4. PUBLIC ACCESS TO INFORMATION

4.1. Public Consultation

NADB published the draft certification proposal for a 30-day public comment period beginning on March 18, 2021.

4.2. Outreach Activities

Given the Project was subject to a CEQA process, no other public consultation is required. However, the Sponsor will be available to respond to any questions that the public may have during the planning and design processes.

NADB conducted a media search to identify potential public opinion about the Project. References to the Project were found on the websites listed below:

- *Globe Newswire* (December 11, 2017) – "*Powin Energy Sells 110MWh of Operating Projects and Pipeline to esVolta"* (https://www.globenewswire.com/news-release/2017/12/11/1250781/0/en/powin-energy-sells-110mwh-of-operating-projects-and-pipeline-to-esvolta.html).

- *Business Wire* (October 15, 2018) – "*esVolta Selected for Four Energy Storage Projects Totaling 38.5 MWhs in Southern California*" (https://www.businesswire.com/news/home/20181015005312/en/esVolta-Selected-Energy-Storage-Projects-Totaling-38.5).

- Energy Daily (October 16, 2018) – "*esVolta selected for 4 energy storage projects totaling 38.5 MWhs in Southern California"* (https://www.energy-daily.com/reports/esVolta_selected_for_4_energy_storage_projects_totaling_38_5_MWhs_in_Southern_California_999.html).

- Power Engineering (October, 16, 2018) – "*SoCal Edison Selects esVolta for Energy Storage Projects"* (https://www.power-eng.com/energy-storage/socal-edison-selects-esvolta-for-energy-storage-projects/#gref).

- PV Magazine (July 29,2019) – *"345 MWh energy storage investment seen as a low risk growth strategy*" (https://pv-magazine-usa.com/2019/07/29/345-mwh-energy-storage-investment-seen-as-low-risk-growth-strategy/).

In summary, these publications highlight the scope of the Project. Opposition to the Project was not detected from the available media coverage. The Sponsor has conducted the appropriate consultations in order to comply with applicable permitting processes.