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Staff Report for Presentation by ZipPower LLC: California Energy Commission Grant to Develop a San Leandro Distributed Renewable Energy Micro Grid

### SUMMARY AND RECOMMENDATIONS

In February 2016, Olidata Smart Cities (now [ZipPower LLC <http://www.zippower.city/>](http://www.zippower.city/)) entered into a collaboration [partnership](#) with the City of San Leandro, [OSIsoft <http://www.osisoft.com/>](http://www.osisoft.com/), [Lawrence Berkeley National Labs <http://www.lbl.gov/>](http://www.lbl.gov/), [GELI <http://geli.net/>](http://geli.net/), [PG&E <http://www.pge.com/>](http://www.pge.com/) and [California ISO <http://www.caiso.com/Pages/default.aspx>](http://www.caiso.com/Pages/default.aspx) to apply for a \$1.5 million [California Energy Commission <http://www.energy.ca.gov/>](http://www.energy.ca.gov/) (“CEC”) [grant](#) under its EPIC Challenge: Accelerating the Deployment of Advanced Energy Communities. The CEC announced in late March that ZipPower had been awarded \$1.5Mm, scoring the second highest number of points in the state-wide competition.

The CEC grant provides San Leandro the opportunity to be the pilot city in this public/private collaboration to design a citywide local energy program that can be rapidly scaled to other communities. The ZipPower platform proposes economies of scale for deploying solar, battery storage and other energy-related hardware; connecting renewable energy assets through PG&E and fiber optic infrastructure into a local, San Leandro-based micro grid that provides grid resilience and security; and proposes substantial economic benefits through new local jobs and entrepreneurship attracted to the growing energy/hardware/software/internet of things innovation ecosystem.

Representatives of ZipPower LLC will be presenting the ZipPower program and platform to the [City Council](#). This is an informational report only.

### BACKGROUND

In 2009, the City of San Leandro adopted its [Climate Action Plan: Vision of a Sustainable San Leandro <http://www.sanleandro.org/civicax/filebank/blobdload.aspx?blobid=4904>](http://www.sanleandro.org/civicax/filebank/blobdload.aspx?blobid=4904). The City’s of

San Leandro's climate strategy is based on the Local Governments for Sustainability (ICLEI) 5-Milestone process:

1. Conduct an inventory of city-wide greenhouse gas ("GHG") emissions - completed 2005
2. Set a reduction target/goal - 25% below 2005 level by 2020 adopted June 2006
3. Establish a Climate Action Plan - adopted December 2009
4. Implement a Climate Action Plan
5. Monitor and evaluate progress

The Climate Action Plan and GHG reduction measures and actions are structured around the four general categories of GHG emissions: energy use in buildings; transportation and land use; waste; and municipal operations.

In March 2013, the Council was provided an [update](http://www.sanleandro.org/civica/filebank/blobload.asp?BlobID=14971) [update](http://www.sanleandro.org/civica/filebank/blobload.asp?BlobID=14971) on the San Leandro Climate Action Plan. The report identified various departmental efforts that resulted in extensive energy upgrades with Federal Stimulus (EECBG) funds, as well as other Federal, State and City resources.

The City of San Leandro is now exploring opportunities to reduce City energy costs using clean technology products and applications. In May 2016, the Council approved a \$5.5mM Agreement with [Climatec LLC](http://www.climatec.com/) to install and implement certain energy or **and** water conservation services, including the installation of LED lights on each City-owned light pole, managed through wireless sensors on top of each pole. The costs of implementing this program will be covered through energy cost savings following implementation.

The City also is engaged with the County of Alameda and its member cities to explore the potential of implementing a [Community Choice Aggregation \(CCA\) program](https://www.acgov.org/cda/planning/cca/). Final version of the technical study and ordinance to form the Joint Powers Authority is expected to go to the full County Board of Supervisors on August 2, 2016 for final approval. Once the JPA has been authorized, formation will begin and will include launch of a Community Choice Energy program to begin purchasing power by spring 2017. Alameda County cities can begin to opt in once the JPA has been formed, with the first cities expected to join by year-end 2016.

#### Setting the Stage: Global, Federal, State and Local Climate Action Initiatives

At the historic [Paris Climate Conference](http://www.cop21paris.org/) (COP21) in December 2015, 195 countries adopted the first-ever universal, legally binding global climate deal. The agreement sets out a global action plan to put the world on track to mitigate dangerous climate change by limiting global warming to well below 2°C. The Agreement is due to enter into force in 2020.

**Federal and State Climate Action Initiatives** continue to support efforts to reduce greenhouse gas emissions. A key Federal initiative was the adoption of America's [Clean Power Plan](https://www.epa.gov/cleanpowerplan/clean-power-plan-existing-power-plants) in August 2015. The Plan sets standards to reduce carbon dioxide emissions by 32 percent from 2005 levels by 2030. It also sets carbon pollution standards for power plants. The Plan is expected to boost wind and solar power generation and could also provide a boost to technologies that would integrate that renewable energy into the existing electrical grid.

In California, [Governor Brown signed SB 350 in 2015](http://focus.senate.ca.gov/climate/sb350-facts), mandating ambitious new energy and climate goals for California by 2030, including: (1)

statewide targets of up to 50% reduction in petroleum use in our cars and trucks; (2) 50% electricity generation from renewable sources; (3) doubling energy efficiency of ALL buildings; and (4) establishment of a new integrated resource planning process to encourage development of comprehensive plans that meet California's GHG reduction goals.

With the engagement of federal and state agencies, clean energy generation and storage grant opportunities are providing opportunities for public/private partnerships that pave the way to scaling renewable energy generation.

### CEC's EPIC Challenge: Accelerating the Deployment of Advanced Energy Communities (GFO-15-312)

The opportunity to create a renewable energy micro grid project in San Leandro grew out of [San Leandro Solar Week in April 2015 <http://sanleandronext.com/san-leandro-solar-week-the-video/>](http://sanleandronext.com/san-leandro-solar-week-the-video/).

Building a micro grid would leverage San Leandro's public and private real estate assets to create a locally-generated renewable energy network that would meet - and likely surpass - the goals of San Leandro's Climate Action Plan and other federal and state energy mandates.

In December 2015, a strategic collaboration was formed to apply for a grant under the California Energy Commission's ("CEC") [Electric Program Investment Charge \("EPIC"\) <http://www.energy.ca.gov/contracts/epic.html>](http://www.energy.ca.gov/contracts/epic.html) program, "Accelerating the Deployment of Advanced Energy Communities". The partner organizations included [ZipPower LLC <http://www.zippower.city/>](http://www.zippower.city/) (grant lead), the City of San Leandro, [OSIsoft <http://www.osisoft.com/>](http://www.osisoft.com/), [Lawrence Berkeley National Labs <http://www.lbl.gov/>](http://www.lbl.gov/), [GELI <http://geli.net/>](http://geli.net/), [PG&E <http://www.pge.com/>](http://www.pge.com/) and [California ISO <http://www.caiso.com/Pages/default.aspx>](http://www.caiso.com/Pages/default.aspx).

In late March, the CEC notified ZipPower that its proposal had been awarded a \$1.5 million grant. The grant will fund development and prototyping of the ZipPower™ platform and scored 2<sup>nd</sup> in a field of 10 applicants in its group (see attachment). It should be noted that the original project applicant, Olidata Smart Cities, LLC has been renamed and rebranded as ZipPower LLC.

The CEC award will fund design of ZipPower™ - a local renewable energy program that will work to scale adoption and installation of renewable energy (solar, wind, etc.), including energy efficiency, battery storage, electric vehicles and other emerging clean and energy-related technologies across San Leandro. Most significantly, ZipPower proposes to connect these energy systems to each other through a distributed energy "micro grid" that increases energy resiliency (local electricity generation) and improves PG&E's ability to balance new "Distributed Energy Resources" - the future envisioned by Governor Brown in passing SB 350. California utilities are now required to figure out how they fit into a future where energy comes from many and varied sources instead of a few, often carbon-based resources controlled by a few companies (coal, hydro, nuclear, etc.).

Staff's role in this grant will ensure that the developing program and platform integrates with City policies and resources related to energy, including:

1. **Optimal sites:** Help identify optimal sites and site owners within San Leandro - e.g. the "Top 25"
2. **Emergency Locations:** Identify emergency locations - e.g. City Hall, hospital, police station, fire station, etc. - to provide backup power during major emergencies
3. **Incentives:** Help design a ZipPower city-based incentive program that helps accelerate participation
4. **Permitting:** Help design a more automated planning & permitting solution with ZipPower and Accela
5. **Waste-to-Energy:** Facilitate ZipPower development of waste-to-energy plan, including assessing resources and vendors

**6. New Development:** Provide PG&E with plans for new development across city to ensure optimal grid planning

The grant allocates \$92K for staff time contributed toward completion of grant objectives.

### **Pacific Gas & Electric Company**

The importance of PG&E's collaboration in this grant application cannot be overstated. PG&E is committed to a future where energy resources are distributed, not centralized. On June 21, 2016, ZipPower's partner, PG&E, [announced it would not seek to renew licenses to operate the Diablo Canyon nuclear power plant <http://www.utilitydive.com/news/pge-to-close-diablo-canyon-nuclear-plant-replace-it-with-renewables-effi/421297/>](http://www.utilitydive.com/news/pge-to-close-diablo-canyon-nuclear-plant-replace-it-with-renewables-effi/421297/), which would expire in 2024 and 2025. Instead, the plant will be closed and energy production replaced with a combination of renewable energy, efficiency and energy storage. Diablo is the last nuclear plant in California and provides about 9% of California's electricity.

#### What is ZipPower™?

ZipPower™ will be a cloud platform <[https://en.wikipedia.org/wiki/Cloud\\_computing](https://en.wikipedia.org/wiki/Cloud_computing)>cloud platform, a web application that can be accessed by a range of computers and smart devices through shared processing resources ("the cloud"). Every member of the San Leandro community will be invited and encouraged to become a member of this energy advisory platform, at no cost, where members learn how even small investments in energy efficiency will save money; cost savings and contributions to greenhouse gas reduction and other environmental impacts will be tracked by the member, providing instant feedback regarding impact of energy changes; neighbor members will be able to engage in friendly competition to accelerate energy and greenhouse gas reduction goals; and cumulative data from all member activities will be aggregated to provide specific data to the City across a wide range of energy metrics, including status of greenhouse gas emissions and progress toward citywide reduction goals.

ZipPower™ will also provide services and products that bridge the existing technology and communications gap between San Leandro property owners interested in placing solar on their property and the myriad of solar sellers and funding programs trying to sell to them. Whether in the City's industrial area or residential areas, there are a number of solar companies knocking on doors and pitching solar solutions that promise to save money. Whether purchase, lease or Purchase Power Agreement ("PPA") is proposed, the property owner is too often overwhelmed by conflicting proposals and will choose to do nothing at all.

ZipPower proposes to end this confusion by providing every interested ZipPower member or San Leandro property owner a *solar energy feasibility analysis* based on existing PG&E data and physical assets and constraints of the property. If assessment shows a potential configuration that could produce a positive Return on Investment ("ROI"), recommendations will include one or more financing options based on individual or company financial, tax and energy goals. As discussions progress, recommended improvements including building upgrades, energy efficiencies, battery storage, etc. may also be provided.

The U.S. Energy Information Administration reports that of the 4 trillion kilowatt hours of electricity generated in 2015, renewables produced only 7% of the total. The key opportunity for the City of San Leandro and its partners is to facilitate the adoption of energy creation and efficiency citywide through creation of a platform that connects community to common goals around energy and each other. This platform initially will be a technology platform, one that engages, educates, connects, facilitates desired energy transactions, saves cost through aggregation and gamifies the process to increase community engagement. Later on, it is likely to include a retail, brick-and-mortar presence as well.

Data produced by the ZipPower™ platform will provide individuals and businesses the ability to track their own journey toward energy resiliency through an interactive and engaging dashboard. The aggregated energy reduction and generation efforts of each member will be visualized on the dashboard in a graphic that calculates progress regarding San Leandro's citywide GHG reduction goals.

**What is ZipPower's revenue source?** ZipPower will charge a 10% fee for each energy project transacted, paid by energy developers and financiers only. The property owner, whether public or private, is not charged.

**How Does this Benefit the Renewable Energy Industry?** ZipPower will identify optimal properties across the City, engage, acquire, aggregate and ultimately lower the cost of financing projects. Solar manufacturers, contractors, financiers, permitting services - all will have a more predictable sales and production schedule. This method of scaling solar is projected to reduce the cost of selling solar by as much as 30% - the amount of soft costs currently attributed to selling a single solar installation today. ZipPower will eliminate the need for each renewable energy (especially solar) provider to carry a large sales team.

**How Does this Benefit the End-Buyer?** ZipPower is being designed to make it easy for every property owner to find the right, tailored energy solution. The property owner will save money on electrical bills, turning passive, energy-wasting assets (especially commercial/industrial roofs and parking lots) into energy-generating assets.

Hale Foote, President of Scandic, an established, successful San Leandro metal stamping company, made the decision seven years ago to place solar panels on the roof of his manufacturing plant off Alvarado. The results?

- Monthly electrical bills fell from \$4K then to \$1K today
- \$100K roof installed seven years ago came with 25 year warranty. However, roof life-expectancy is anticipated to last far beyond warranty period due to shelter by the solar panels.
- Increasingly, customers (especially hard/ware/software tech companies) are rating their suppliers based on verifiable sustainability and energy efficiency goals and programs.
- Employees love it. Mr. Foote says its gives his employees a sense of pride and stability, seeing the solar as an investment in the business and community.

### **San Leandro: Prototype City for a Clean and Resilient Energy Future**

San Leandro has been provided a unique opportunity to prototype a renewable energy future that proposes to reduce citywide energy costs, creates a more secure and local electric grid, reduced reliance on carbon-based energy, decreased GHG emissions and one that takes full advantage of San Leandro's fiber optic resources. Through identifying San Leandro as a center for energy innovation, this city prepares for a future where climate change is seen as an opportunity for citywide economic growth and measurable quality of life improvements.

The CEC grant is providing San Leandro with the opportunity to engage in a pilot program with no direct financial requirements for the City. There is no substantial risk to the City if the outcome of this development grant proves unsuccessful. If successful, San Leandro is poised to be the City where

an innovative approach to scaling renewable energy in partnership with its utility provider all began. No action is required. This is an informational report only.

### **Current Agency Policies**

Adopted by Council in 2009: [Climate Action Plan: a Vision of a Sustainable San Leandro](http://www.sanleandro.org/depts/cd/plan/climate_action_plan.asp)  
<[http://www.sanleandro.org/depts/cd/plan/climate\\_action\\_plan.asp](http://www.sanleandro.org/depts/cd/plan/climate_action_plan.asp)>

### **Committee Review and Actions**

- Facilities Committee, October 6, 2015: “Smart San Leandro: Proposed Renewable Energy Mesh Grid Project”. Informational report only, no action taken.
- Facilities Committee, February 2, 2016: “Olidata Smart Cities/Zip Power™ Program: CEC Advanced Energy Communities Grant Opportunity”. Informational report only, no action taken.

### **ATTACHMENT(S)**

#### **Attachment(s) to Staff Report**

- California Energy Commission: Notice of proposed award (NOPA) GFO-15-312, EPIC: “Advanced Energy Communities” Dated March 25, 2016

### **ATTACHMENT(S)**

#### **Attachment(s) to Staff Report**

- “ZipPower San Leandro: Smart Energy Network for Our Cities” - Presentation by ZipPower LLC

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