A) New Agreement # EPC-20-047 (to be completed by CGL office)

B) Division	Agreement Manager:	MS-	Phone
ERDD	Michael Lozano	51	916-776-0788

C) Recipient's Legal Name	Federal ID Number
Zira Group Inc (DBA Lightapp)	37-1783883

D) Title of Project

Leveraging artificial intelligence and machine learning to increase energy efficiency in California dairies

E) Term and Amount

Start Date	End Date	Amount
7/1/2021	3/31/2025	\$ 4,227,648

	ARFVTP a	agreements	\$75K and	under	delegated	to	Executive Directo	r
_		0	•					

Proposed Business Meeting Date 6/9/2021 ☐ Consent ☐ Discussion

Business Meeting Presenter Michael Lozano Time Needed: 5 minutes

Please select one list serve. EPIC (Electric Program Investment Charge)

Agenda Item Subject and Description:

Zira Group Inc (DBA Lightapp)

Zira Group Inc. DBA Lightapp. Proposed resolution approving Agreement EPC-20-047 with Zira Group Inc. DBA Lightapp for a \$4,227,648 grant to demonstrate and deploy advanced energy management software solutions that leverages artificial intelligence, machine learning and other data to maximize energy efficiency at California dairy processing facilities, and adopting staff's determination that this action is exempt from CEQA. Michael Lozano.

G) California Environmental Quality Act (CEQA) Compliance

1.	Is Agreement considered a "Project" under CEQA?
	☐ Yes (skip to question 2)☐ No (complete the following (PRC 21065 and 14 CCR 15378))
	Explain why Agreement is not considered a "Project":

- 2. If Agreement is considered a "Project" under CEQA:
 - a) ⊠ Agreement **IS** exempt.

 ☐ Statutory Exemption. List PRC and/or CCR section number:

 ☐ Categorical Exemption. List CCR section number: Cal. Code

☑ Categorical Exemption. List CCR section number: Cal. Code Regs., tit. 14, § 15301; Cal. Code Regs., tit. 14, § 15306

Common Sense Exemption. 14 CCR 15061 (b) (3)

Explain reason why Agreement is exempt under the above section: Cal. Code Regs., tit. 14, sect. 15301 provides that projects which consist of operation, repair, maintenance, leasing, licensing, or minor alteration of existing structure, facilities,

mechanical equipment, or topographical features, which involve negligible or no expansion of use beyond that existing at the time of the lead agency's California Environmental Quality Act determination are categorically exempt from the provisions of the California Environmental Quality Act. The project will include the installation of various meters, sensors, and controls for energy optimization of the current facilities' processes.

Cal. Code Regs., tit. 14, sect. 15306 provides that projects which consist of basic data collection, research, experimental management, and resource evaluation activities, and which do not result in a serious or major disturbance to an environmental resource are categorically exempt from the provisions of the California Environmental Quality Act. This project will be collecting electricity usage data from different existing processes within dairy facilities as inputs for the energy management system that will be installed for improved energy efficiency optimization.

b) Agreement IS steps)	NOT exempt. (consu	lt with the legal offic	e to determine next			
Check all that	apply					
☐ Initial Stud	dy					
☐ Negative I	☐ Negative Declaration					
☐ Mitigated	☐ Mitigated Negative Declaration					
☐ Environme	ental Impact Report					
☐ Statement	t of Overriding Conside	rations				
H) List all subcontractors (m as necessary)	ajor and minor) and e	quipment vendors	: (attach additional sheets			
Legal Company Name:			Budget			
			\$			
I) List all key partners: (attac	h additional sheets a	s necessary)				
Legal Company Name:						
J) Budget Information						
Funding Source	Funding Year of	Budget List	Amount			

Number

\$4,227,648

301.001H

R&D Program Area: EERO: IAW TOTAL: \$ 4,227,648

Appropriation

20-21

Explanation for "Other" selection

EPIC

Reimbursement Contract #: Federal Agreement #:

K) Recipient's Contact Information



1. Recipient's Administrator/Officer

Name: Elhay Farkash Address: 400 Concar Dr

City, State, Zip: San Mateo, CA

94402-2681

Phone: 650 -701-7026 E-Mail: elhayf@zira.us

2. Recipient's Project Manager

Name: Elhay Farkash Address: 400 Concar Dr

City, State, Zip: San Mateo, CA

94402-2681

Phone: 650 -701-7026 E-Mail: elhayf@zira.us

L) Sel	ection Process Used			
☐ Firs	st Come First Served So	olicitation Solicitation #:		
☐ Noi	n-Competitive Bid Follo	w-on Funding (SB 115)		
M) The	following items shou	ld be attached to this GRF		
1.	Exhibit A, Scope of W	/ork		
2.	Exhibit B, Budget Det	tail		
3.	3. CEC 105, Questionnaire for Identifying Conflicts			
4.	Recipient Resolution N/A Attache			
5.	CEQA Documentation	n 🗌 N/A		
Agraam	ont Monogor			
Agreeme	ent Manager	Date		
Office M	anager	Date		
		<u> </u>		
Deputy Director		Date		

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR ¹	Task Name
1		General Project Tasks
2		Research and Analysis of Target Dairy Facilities, Prepare Marketing Materials, Configure Software for Dairy Processes
3	X	Conduct Marketing Activities, Complete Dairy Industry Energy Consumer Mapping, Select 30 Facilities for Install
4		Install Meters and Communication Systems. Collect and Analyze Baseline
		Data
5	X	Roll Out Zira to All Facility Personnel
6		Deploy and Train Machine Learning Specific for Dairy Processing Facilities
7		Analyze Data and Evaluate Savings
8		Project Measurement and Verification
9		Evaluation of Project Benefits
10		Technology/Knowledge Transfer Activities

B. Acronym/Term List

Acronym/Term	Meaning
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CEC	California Energy Commission
CPR	Critical Project Review
TAC	Technical Advisory Committee
Al	Artificial Intelligence
ML	Machine Learning
EMS	Energy Management System

II. PURPOSE OF AGREEMENT, PROBLEM/SOLUTION STATEMENT, AND GOALS AND OBJECTIVES

A. Purpose of Agreement

The purpose of this Agreement is to fund the demonstration and deployment of the Recipient's advanced energy management software solution that leverages artificial intelligence and machine learning to maximize energy efficiency by combining real-time energy, operational, and behavioral data at California dairy processing facilities.

¹ Please see subtask 1.3 in Part III of the Scope of Work (General Project Tasks) for a description of Critical Project Review (CPR) Meetings.

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B. Problem/ Solution Statement

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Problem

Dairy processing facilities, mostly mid-sized (and small), are continuously pressed to reduce costs and are operating with minimal technical staff and capabilities and even less in specific digitization and automation resources. This results in little visibility into operations and energy consumption, making it difficult to identify and tackle problems in real time (or implement an improvement process). Even though energy is one of the top costs of running a dairy, with 50% of that cost going into chillers and air-compressors, it's viewed as fixed costs while improving labor productivity or saving money on raw material is viewed as more immediate and measurable.

The same problem exists in many other industrial vertices as well. Industrial manufacturers from all verticals have paid little attention to electricity consumption. Many are unaware of energy conservation and energy efficiency opportunities that could have low cost or no cost. Often the only electricity data available is at the whole facility level and cannot be easily analyzed to find energy-saving opportunities. Process-level submetering has been rare due to its historically high costs and it is typically not used to find ways to lower energy costs (rather improve reliability). Even more important, Energy Management Systems (EMS) that are on the market today that use real-time data and analysis to identify energy savings do not take into consideration real time operations and behavioral data from the people managing energy consuming systems.

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Solution

The Recipient will demonstrate the effectiveness of energy management software that leverages All and machine learning to collect, analyze and drive action from data acquired from existing and newly installed sensors placed at cooling systems, compressed air systems and major pumps within the dairy processing facilities. Electricity consumption data will be correlated with production inputs and outputs and operational data from both machines and operators to identify anomalies that cannot be explained by changes in the facility's production run rate. Artificial intelligence and machine learning algorithms will be applied to collected data to identify improvement opportunities faster and more accurately than a traditional EMS. The demonstration will provide insights and an industry specific module that will benefit and can be applied to any dairy manufacturer.

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C. Goals and Objectives of the Agreement

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Agreement Goals

The goals of this Agreement are to:

41 42 Reduce the electricity used by dairy manufacturers per unit of industrial output by 20% or more upon full implementation of Task 4 compared to the baseline gather in Task 2. (Previous CEC EPIC project, "Project Engage" outcome was 17% reduction of energy consumption on average).

43 44 Leverage energy consumption data to identify problems in milk processing therefore lowering operating costs for dairy manufacturers and reducing waste yield (milk loss in the process or idle operations), ultimately improving competitiveness of California dairy businesses.

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• Generate data from at least 30 dairy manufacturers (~20% of the dairy processing industrial vertical in California) which will be the minimum required to train machine

learning algorithms designed for energy management in different types of dairy processing activities.

Ratepayer Benefits:² This Agreement will result in the ratepayer benefits of lower costs and improved competitive abilities for dairy manufacturing businesses in California. Dairy manufacturers will receive analysis and recommendations in real time that enable them to optimize their manufacturing process with respect to electricity consumption. The agreement will provide a dairy industry specific, Al driven energy management module that can be applied to any dairy manufacturer in California. Commercialization will lead to a larger number of dairy manufacturers lowering their electricity costs and triggering a network effect that will be self-sustaining and grow better and better with more data and insights. The agreement will also demonstrate how an Al driven energy management system for dairy manufacturers leads to an increase in the adoption of capital improvement projects to improve the energy efficiency of equipment and dairy processing operations.

<u>Technological Advancement and Breakthroughs</u>:³ This Agreement will lead to technological advancement and breakthroughs to overcome barriers to the achievement of the State of California's statutory energy goals by addressing multiple barriers to improving energy efficiency in the industrial sector (including dairy manufacturers).

First, the project could lower energy and operation costs of facilities, overcoming industrial dairy customers' resistance to change by providing a no- or low-cost opportunity to deploy an innovative energy management system.

Second, the project could increase the reliability and safety of facilities, who can respond faster to energy problems by filling a technology gap that leverages the benefits of falling communicating sensor costs and cloud-based analytic tools to understand machine and facility energy performance.

Third, the project could make efficient use of ratepayers' monies because it overcomes the challenge of industry fragmentation and isolation by focusing on common industrial systems, compressed air, cooling, refrigeration, and pumping/mixing and providing benchmarking.

Agreement Objectives

The objectives of this Agreement are to:

Recruit 30 dairy manufacturers to use an advanced energy management system, to map
the facility currently installed electricity consumers and energy demand and install up to 20
electricity meters and communications devices for each facility.

² California Public Resources Code, Section 25711.5(a) requires projects funded by the Electric Program Investment Charge (EPIC) to result in ratepayer benefits. The California Public Utilities Commission, which established the EPIC in 2011, defines ratepayer benefits as greater reliability, lower costs, and increased safety (See CPUC "Phase 2" Decision 12-05-037 at page 19, May 24, 2012, http://docs.cpuc.ca.gov/PublishedDocs/WORD PDF/FINAL DECISION/167664.PDF).

³ California Public Resources Code, Section 25711.5(a) also requires EPIC-funded projects to lead to technological advancement and breakthroughs to overcome barriers that prevent the achievement of the state's statutory and energy goals.

- Create dairy industry specific energy key performance indicators
- Train machine learning algorithms specifically designed for dairy energy optimization and resource management
- Incorporate Recipient's advanced energy management system into daily routines and decision-making processes
- Measure and calculate electricity savings and cost savings that result from using the advanced energy management system

III. TASK 1 GENERAL PROJECT TASKS

PRODUCTS

Subtask 1.1 Products

The goal of this subtask is to establish the requirements for submitting project products (e.g., reports, summaries, plans, and presentation materials). Unless otherwise specified by the Commission Agreement Manager (CAM), the Recipient must deliver products as required below by the dates listed in the **Project Schedule (Part V)**. All products submitted which will be viewed by the public, must comply with the accessibility requirements of Section 508 of the federal Rehabilitation Act of 1973, as amended (29 U.S.C. Sec. 794d), and regulations implementing that act as set forth in Part 1194 of Title 36 of the Federal Code of Regulations. All technical tasks should include product(s). Products that require a draft version are indicated by marking "(draft and final)" after the product name in the "Products" section of the task/subtask. If "(draft and final)" does not appear after the product name, only a final version of the product is required. With respect to due dates within this Scope of Work, "days" means working days.

The Recipient shall:

For products that require a draft version, including the Final Report Outline and Final Report

- Submit all draft products to the CAM for review and comment in accordance with the Project Schedule (Part V). The CAM will provide written comments to the Recipient on the draft product within 15 days of receipt, unless otherwise specified in the task/subtask for which the product is required.
- Consider incorporating all CAM comments into the final product. If the Recipient disagrees
 with any comment, provide a written response explaining why the comment was not
 incorporated into the final product.
- Submit the revised product and responses to comments within 10 days of notice by the CAM, unless the CAM specifies a longer time period, or approves a request for additional time.

For products that require a final version only

• Submit the product to the CAM for acceptance. The CAM may request minor revisions or explanations prior to acceptance.

For all products

Submit all data and documents required as products in accordance with the following:

Instructions for Submitting Electronic Files and Developing Software:

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Services Branch to determine whether the exceptions are allowable.

MEETINGS

Subtask 1.2 Kick-off Meeting The goal of this subtask is to establish the lines of communication and procedures for

The Recipient shall:

Electronic File Format

Submit all data and documents required as products under this Agreement in an electronic file format that is fully editable and compatible with the California Energy Commission's (CEC) software and Microsoft (MS)-operating computing platforms, or with any other format approved by the CAM. Deliver an electronic copy of the full text of any Agreement data and documents in a format specified by the CAM, such as memory stick.

The following describes the accepted formats for electronic data and documents provided to the CEC as products under this Agreement, and establishes the software versions that will be required to review and approve all software products:

- Data sets will be in MS Access or MS Excel file format (version 2007 or later), or any other format approved by the CAM.
- Text documents will be in MS Word file format, version 2007 or later.
- Project management documents will be in Microsoft Project file format, version 2007 or later.

Software Application Development

Use the following standard Application Architecture components in compatible versions for any software application development required by this Agreement (e.g., databases, models, modeling tools), unless the CAM approves other software applications such as open source programs:

- Microsoft ASP.NET framework (version 3.5 and up). Recommend 4.0.
- Microsoft Internet Information Services (IIS), (version 6 and up) Recommend 7.5.
- Visual Studio.NET (version 2008 and up). Recommend 2010.
- C# Programming Language with Presentation (UI), Business Object and Data

Any exceptions to the Electronic File Format requirements above must be approved

in writing by the CAM. The CAM will consult with the CEC's Information Technology

- SQL (Structured Query Language).
- Microsoft SQL Server 2008, Stored Procedures. Recommend 2008
- Microsoft SQL Reporting Services. Recommend 2008 R2.
- XML (external interfaces).

implementing this Agreement.

• Attend a "Kick-off" meeting with the CAM, the Commission Agreement Officer (CAO), and any other CEC staff relevant to the Agreement. The Recipient will bring its Project Manager and any other individuals designated by the CAM to this meeting. The administrative and technical aspects of the Agreement will be discussed at the meeting. Prior to the meeting, the CAM will provide an agenda to all potential meeting participants. The meeting may take place in person or by electronic conferencing (e.g., WebEx), with approval of the CAM.

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The <u>administrative portion</u> of the meeting will include discussion of the following:

- Terms and conditions of the Agreement;
 - o Invoicing and auditing procedures;
- Administrative products (subtask 1.1);
- CPR meetings (subtask 1.3);
- Match fund documentation (subtask 1.7);
- Permit documentation (subtask 1.8);
- Subcontracts (subtask 1.9); and
- Any other relevant topics.

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The <u>technical portion</u> of the meeting will include discussion of the following:

- The CAM's expectations for accomplishing tasks described in the Scope of Work;
- o An updated Project Schedule;
- Technical products (subtask 1.1);
- Progress reports (subtask 1.5);
- Final Report (subtask 1.6);
- o Technical Advisory Committee meetings (subtasks 1.10 and 1.11); and
- Any other relevant topics.

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• Provide *Kick-off Meeting Presentation* to include but not limited to:

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- Project overview (i.e. project description, goals and objectives, technical tasks, expected benefits, etc.)
- Project schedule that identifies milestones
 List of potential risk factors and hurdles, and mitigation strategy

Letter, as needed to reflect any changes in the documents.

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Provide an Updated Project Schedule, Match Funds Status Letter, and Permit Status

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The CAM shall:

- Designate the date and location of the meeting.
- Send the Recipient a Kick-off Meeting Agenda.

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Recipient Products:

- Kick-off Meeting Presentation
- Updated Project Schedule (if applicable)
- Match Funds Status Letter (subtask 1.7) (if applicable)
- Permit Status Letter (subtask 1.8) (if applicable)

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CAM Product:

Kick-off Meeting Agenda

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Subtask 1.3 Critical Project Review (CPR) Meetings

The goal of this subtask is to determine if the project should continue to receive CEC funding, and if so whether any modifications must be made to the tasks, products, schedule, or budget. CPR meetings provide the opportunity for frank discussions between the CEC and the Recipient. As determined by the CAM, discussions may include project status, challenges, successes, advisory group findings and recommendations, final report preparation, and progress on technical transfer and production readiness activities (if applicable). Participants will include the CAM and the Recipient and may include the CAO and any other individuals selected by the CAM to provide support to the CEC.

CPR meetings generally take place at key, predetermined points in the Agreement, as determined by the CAM and as shown in the Task List on page 1 of this Exhibit. However, the CAM may schedule additional CPR meetings as necessary. The budget will be reallocated to cover the additional costs borne by the Recipient, but the overall Agreement amount will not increase. CPR meetings generally take place at the CEC, but they may take place at another location, or may be conducted via electronic conferencing (e.g., WebEx) as determined by the CAM.

The Recipient shall:

- Prepare and submit a *CPR Report* for each CPR meeting that: (1) discusses the progress of the Agreement toward achieving its goals and objectives; and (2) includes recommendations and conclusions regarding continued work on the project.
- Attend the CPR meeting.
- Present the CPR Report and any other required information at each CPR meeting.

The CAM shall:

- Determine the location, date, and time of each CPR meeting with the Recipient's input.
- Send the Recipient a CPR Agenda with a list of expected CPR participants in advance of the CPR meeting. If applicable, the agenda will include a discussion of match funding and permits.
- Conduct and make a record of each CPR meeting. Provide the Recipient with a schedule for providing a Progress Determination on continuation of the project.
- Determine whether to continue the project, and if so whether modifications are needed to
 the tasks, schedule, products, or budget for the remainder of the Agreement. If the CAM
 concludes that satisfactory progress is not being made, this conclusion will be referred to
 the Deputy Director of the Energy Research and Development Division.
- Provide the Recipient with a *Progress Determination* on continuation of the project, in accordance with the schedule. The Progress Determination may include a requirement that the Recipient revise one or more products.

Recipient Products:

CPR Report(s)

CAM Products:

- CPR Agenda
- Progress Determination

Subtask 1.4 Final Meeting

The goal of this subtask is to complete the closeout of this Agreement.

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The Recipient shall:

Meet with CEC staff to present project findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement. This meeting will be attended by the Recipient and CAM, at a minimum. The meeting may occur in person or by electronic conferencing (e.g., WebEx), with approval of the CAM.

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The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be divided into two separate meetings at the CAM's discretion.

11 12 13 The technical portion of the meeting will involve the presentation of findings, conclusions, and recommended next steps (if any) for the Agreement. The CAM will determine the appropriate meeting participants.

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The administrative portion of the meeting will involve a discussion with the CAM and the CAO of the following Agreement closeout items:

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Disposition of any procured equipment.

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The CEC's request for specific "generated" data (not already provided in Agreement products).

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Need to document the Recipient's disclosure of "subject inventions" developed under the Agreement.

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"Surviving" Agreement provisions such as repayment provisions and confidential products.

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Final invoicing and release of retention.

25 26 Prepare a Final Meeting Agreement Summary that documents any agreement made between the Recipient and Commission staff during the meeting.

27 28 • Prepare a Schedule for Completing Agreement Closeout Activities.

 Provide copies of All Final Products on a USB memory stick, organized by the tasks in the Agreement.

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Products:

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• Final Meeting Agreement Summary (if applicable)

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Schedule for Completing Agreement Closeout Activities All Final Products

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REPORTS AND INVOICES

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Subtask 1.5 Progress Reports and Invoices

The goals of this subtask are to: (1) periodically verify that satisfactory and continued progress is made towards achieving the project objectives of this Agreement; and (2) ensure that invoices contain all required information and are submitted in the appropriate format.

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The Recipient shall:

44 45 Submit a monthly *Progress Report* to the CAM. Each progress report must:

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Summarize progress made on all Agreement activities as specified in the scope of work for the preceding month, including accomplishments, problems, milestones, products, schedule, fiscal status, and an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. See the Progress Report Format Attachment for the recommended specifications.

• Submit a monthly or quarterly *Invoice* that follows the instructions in the "Payment of Funds" section of the terms and conditions, including a financial report on Match Funds and in-state expenditures.

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- Invoices

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Subtask 1.6 Final Report

Progress Reports

The goal of this subtask is to prepare a comprehensive Final Report that describes the original purpose, approach, results, and conclusions of the work performed under this Agreement. When creating the Final Report Outline and the Final Report, the Recipient must use the CEC Style Manual provided by the CAM.

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Subtask 1.6.1 Final Report Outline

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The Recipient shall:

18 19 • Prepare a *Final Report Outline* in accordance with the *Energy Commission Style Manual* provided by the CAM.

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Recipient Products:

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Final Report Outline (draft and final)

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CAM Product:

- Energy Commission Style Manual
- Comments on Draft Final Report Outline

Acceptance of Final Report Outline

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Subtask 1.6.2 Final Report

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The Recipient shall:

33 34 Prepare a Final Report for this Agreement in accordance with the approved Final Report
Outline, Energy Commission Style Manual, and Final Report Template provided by the
CAM with the following considerations:

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Ensure that the report includes the following items, in the following order:

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Cover page (required)
 Credits page on the reverse side of cover with legal disclaimer (required)

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Acknowledgements page (optional)

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Acknowledgements page (o)Preface (required)

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Abstract, keywords, and citation page (required)

41 42 Table of Contents (required, followed by List of Figures and List of Tables, if needed)

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Executive summary (required)

44 45 Body of the report (required)References (if applicable)

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- Glossary/Acronyms (If more than 10 acronyms or abbreviations are used, it is required.)
- Bibliography (if applicable)

- Appendices (if applicable) (Create a separate volume if very large.)
- Attachments (if applicable)
- Submit a draft of the Executive Summary to the TAC for review and comment.
- Develop and submit a *Summary of TAC Comments* received on the Executive Summary. For each comment received, the recipient will identify in the summary the following:
 - Comments the recipient proposes to incorporate.
 - Comments the recipient does propose to incorporate and an explanation for why.
- Submit a draft of the report to the CAM for review and comment. The CAM will provide written comments to the Recipient on the draft product within 15 days of receipt.
- Incorporate all CAM comments into the *Final Report*. If the Recipient disagrees with any comment, provide a *Written Responses to Comments* explaining why the comments were not incorporated into the final product.
- Submit the revised *Final Report* electronically with any Written Responses to Comments within 10 days of receipt of CAM's Written Comments on the Draft Final Report, unless the CAM specifies a longer time period or approves a request for additional time.

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- Summary of TAC Comments
- Draft Final Report
- Written Responses to Comments (if applicable)
- Final Report

CAM Product:

Written Comments on the Draft Final Report

MATCH FUNDS, PERMITS, AND SUBCONTRACTS

Subtask 1.7 Match Funds

The goal of this subtask is to ensure that the Recipient obtains any match funds planned for this Agreement and applies them to the Agreement during the Agreement term.

While the costs to obtain and document match funds are not reimbursable under this Agreement, the Recipient may spend match funds for this task. The Recipient may only spend match funds during the Agreement term, either concurrently or prior to the use of CEC funds. Match funds must be identified in writing, and the Recipient must obtain any associated commitments before incurring any costs for which the Recipient will request reimbursement.

The Recipient shall:

 Prepare a Match Funds Status Letter that documents the match funds committed to this Agreement. If no match funds were part of the proposal that led to the CEC awarding this Agreement and none have been identified at the time this Agreement starts, then state this in the letter.

If match funds were a part of the proposal that led to the CEC awarding this Agreement, then provide in the letter:

- A list of the match funds that identifies:
 - The amount of cash match funds, their source(s) (including a contact name,

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EXHIBIT A Scope of Work Zira Group Inc. (DBA Lightapp)

address, and telephone number), and the task(s) to which the match funds will be applied.

- The amount of each in-kind contribution, a description of the contribution type (e.g., property, services), the documented market or book value, the source (including a contact name, address, and telephone number), and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Recipient must identify its owner and provide a contact name, address, telephone number, and the address where the property is located.
- If different from the solicitation application, provide a letter of commitment from an authorized representative of each source of match funding that the funds or contributions have been secured.
- At the Kick-off meeting, discuss match funds and the impact on the project if they are significantly reduced or not obtained as committed. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide a Supplemental Match Funds Notification Letter to the CAM of receipt of additional match funds.
- Provide a Match Funds Reduction Notification Letter to the CAM if existing match funds are reduced during the course of the Agreement. Reduction of match funds may trigger a CPR meeting.

Products:

- Match Funds Status Letter
- Supplemental Match Funds Notification Letter (if applicable)
- Match Funds Reduction Notification Letter (if applicable)

Subtask 1.8 Permits

The goal of this subtask is to obtain all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track. Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement, with the exception of costs incurred by University of California recipients. Permits must be identified and obtained before the Recipient may incur any costs related to the use of the permit(s) for which the Recipient will request reimbursement.

The Recipient shall:

- Prepare a Permit Status Letter that documents the permits required to conduct this Agreement. If no permits are required at the start of this Agreement, then state this in the letter. If permits will be required during the course of the Agreement, provide in the letter:
 - A list of the permits that identifies: (1) the type of permit; and (2) the name, address, and telephone number of the permitting jurisdictions or lead agencies.
 - The schedule the Recipient will follow in applying for and obtaining the permits.

The list of permits and the schedule for obtaining them will be discussed at the Kick-off meeting (subtask 1.2), and a timetable for submitting the updated list, schedule, and copies of the permits will be developed. The impact on the project if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in progress reports and will be a topic at CPR meetings.

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- If during the course of the Agreement additional permits become necessary, then provide the CAM with an *Updated List of Permits* (including the appropriate information on each permit) and an *Updated Schedule for Acquiring Permits*.

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• Send the CAM a Copy of Each Approved Permit.

6 7 • If during the course of the Agreement permits are not obtained on time or are denied, notify the CAM within 5 days. Either of these events may trigger a CPR meeting.

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Products:

- 9 10
- Permit Status LetterUpdated List of Permits (if applicable)

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• Updated Schedule for Acquiring Permits (if applicable)

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• Copy of Each Approved Permit (if applicable)

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Subtask 1.9 Subcontracts

15 16 17 The goals of this subtask are to: (1) procure subcontracts required to carry out the tasks under this Agreement; and (2) ensure that the subcontracts are consistent with the terms and conditions of this Agreement.

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The Recipient shall:

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 Manage and coordinate subcontractor activities in accordance with the requirements of this Agreement.

22 23 24 • Incorporate this Agreement by reference into each subcontract.

24 25 26 Include any required Energy Commission flow-down provisions in each subcontract, in addition to a statement that the terms of this Agreement will prevail if they conflict with the subcontract terms.

26 27 If required by the CAM, submit a draft of each Subcontract required to conduct the work under this Agreement.

28 29 Submit a final copy of each executed subcontract.
 Notify and receive written approval from the CAM prior

30 31 • Notify and receive written approval from the CAM prior to adding any new subcontractors (see the discussion of subcontractor additions in the terms and conditions).

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Products:

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Subcontracts (draft if required by the CAM)

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TECHNICAL ADVISORY COMMITTEE

39 40 41 Subtask 1.10 Technical Advisory Committee (TAC)
The goal of this subtask is to create an advisory committee for this Agreement. The TAC should

be composed of diverse professionals. The composition will vary depending on interest, availability, and need. TAC members will serve at the CAM's discretion. The purpose of the TAC is to:

42 43 44 Provide guidance in project direction. The guidance may include scope and methodologies, timing, and coordination with other projects. The guidance may be based on:

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Technical area expertise;

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- Knowledge of market applications; or
- Linkages between the agreement work and other past, present, or future projects (both public and private sectors) that TAC members are aware of in a particular area.

- Review products and provide recommendations for needed product adjustments, refinements, or enhancements.
 - Evaluate the tangible benefits of the project to the state of California, and provide recommendations as needed to enhance the benefits.
 - Provide recommendations regarding information dissemination, market pathways, or commercialization strategies relevant to the project products.
 - Help set the project team's goals and contribute to the development and evaluation of its statement of proposed objectives as the project evolves.
 - Provide a credible and objective sounding board on the wide range of technical and financial barriers and opportunities.
 - Help identify key areas where the project has a competitive advantage, value proposition, or strength upon which to build.
 - Advocate, to the extent the TAC members feel is appropriate, on behalf of the project in its effort to build partnerships, governmental support and relationships with a national spectrum of influential leaders.
 - Ask probing questions that insure a long-term perspective on decision-making and progress toward the project's strategic goals.

The TAC may be composed of qualified professionals spanning the following types of disciplines:

- Researchers knowledgeable about the project subject matter;
- Members of trades that will apply the results of the project (e.g., designers, engineers, architects, contractors, and trade representatives);
- Public interest market transformation implementers;
- Product developers relevant to the project;
- U.S. Department of Energy research managers, or experts from other federal or state agencies relevant to the project;
- Public interest environmental groups;
- Utility representatives;
- Air district staff: and
- Members of relevant technical society committees.

The Recipient shall:

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- Prepare a List of Potential TAC Members that includes the names, companies, physical
 and electronic addresses, and phone numbers of potential members. The list will be
 discussed at the Kick-off meeting, and a schedule for recruiting members and holding the
 first TAC meeting will be developed.
- Recruit TAC members. Ensure that each individual understands member obligations and the TAC meeting schedule developed in subtask 1.11.
- Prepare a *List of TAC Members* once all TAC members have committed to serving on the TAC.
- Submit *Documentation of TAC Member Commitment* (such as Letters of Acceptance) from each TAC member.

Products:

- List of Potential TAC Members
- List of TAC Members
- Documentation of TAC Member Commitment

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Subtask 1.11 TAC Meetings

The goal of this subtask is for the TAC to provide strategic guidance for the project by participating in regular meetings, which may be held via teleconference.

Discuss the TAC meeting schedule with the CAM at the Kick-off meeting. Determine the

recruiting. Revise the schedule after the first TAC meeting to incorporate meeting

Prepare a TAC Meeting Agenda and TAC Meeting Back-up Materials for each TAC

Organize and lead TAC meetings in accordance with the TAC Meeting Schedule.

• Prepare TAC Meeting Summaries that include any recommended resolutions of major

Help set the project team's goals and contribute to the development and evaluation of its

• Help identify key areas where the project has a competitive advantage, value proposition,

Advocate on behalf of the project in its effort to build partnerships, governmental support

Provide a credible and objective sounding board on the wide range of technical and

Ask probing questions that insure a long-term perspective on decision-making and

• Review and provide comments to proposed project Draft Technology Transfer Plan.

Changes to the schedule must be pre-approved in writing by the CAM.

statement of proposed objectives as the project evolves.

and relationships with a national spectrum of influential leaders.

• Review and provide comments to proposed project performance metrics.

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The Recipient shall:

comments.

TAC issues.

meeting.

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- number and location of meetings (in-person and via teleconference) in consultation with the CAM. Prepare a TAC Meeting Schedule that will be presented to the TAC members during

The TAC shall:

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Subtask 1.12 Project Performance Metrics

TAC Meeting Summaries

TAC Meeting Back-up Materials

• TAC Meeting Schedule (draft and final)

TAC Meeting Agendas (draft and final)

financial barriers and opportunities.

progress toward the project's strategic goals.

or strength upon which to build.

The goal of this subtask is to finalize key performance targets for the project based on feedback from the TAC and report on final results in achieving those targets. The performance targets should be a combination of scientific, engineering, techno-economic, and/or programmatic metrics that provide the most significant indicator of the research or technology's potential success.

The Recipient shall:

Products:

- Complete and submit the project performance metrics from the *Initial Project Benefits* Questionnaire, developed in the Evaluation of Project Benefits task, to the CAM.
 Present the draft project performance metrics at the first TAC meeting to solicit input a
 - Present the draft project performance metrics at the first TAC meeting to solicit input and comments from the TAC members.
 - Develop and submit a TAC Performance Metrics Summary that summarizes comments received from the TAC members on the proposed project performance metrics. The TAC Performance Metrics Summary will identify:
 - o TAC comments the Recipient proposes to incorporate into the *Initial Project Benefits Questionnaire*, developed in the Evaluation of Project Benefits task.
 - TAC comments the Recipient does not propose to incorporate with and explanation why.
 - Develop and submit a *Project Performance Metrics Results* document describing the extent to which the Recipient met each of the performance metrics in the *Final Project Benefits Questionnaire*, developed in the Evaluation of Project Benefits task.
 - Discuss the *Project Performance Metrics Results* at the Final Meeting.

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- TAC Performance Metrics Summary
- Project Performance Metrics Results

IV. TECHNICAL TASKS

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TASK 2 RESEARCH AND ANALYSIS OF TARGET DAIRY FACILITIES, PREPARE MARKETING MATERIALS, CONFIGURE SOFTWARE FOR DAIRY PROCESSES

The goals of this task are to (1) Research and analyze potential target dairy facilities; (2) prepare marketing materials; and (3) configure a template of the software specifically for this project.

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The Recipient shall:

- Conduct research and analysis of potential target dairies
- Develop an ordered list of facilities to target for participation using dairy industry lists specific to California
 - Connect with dairy industry leaders and associations (ex: Dairy Cares, Dairy Farmers of America, California League of Food Processors)
 - o Complete target dairies stakeholders mapping.
 - o Create and refine a "unique selling proposition" (USP) for dairies.
 - Define targets dairies energy needs and conduct motivation profiling for different dairy processing facilities, in regards to electricity management.
 - o Complete a California dairies business profile on energy aspects and use.
 - Prepare marketing materials and sales kit
 - Develop marketing materials specific to California dairy processing energy management and digitization of dairy facilities with an energy point of view.
 - o Formation of messaging and messaging hierarchy.
 - o Offering structure and messaging copywriting.
 - o Core messaging including boilerplates and visual designs.
 - An executive summary
 - Specific website for the project purposes (and the ability to further use it for industrial vertical expansions beyond the project.)
 - Recorded demo webinars
 - Public how-to videos with core processes
 - Create a dedicated turn-key kit to standardize deployment materials, which will enable field implementers to easily set up selected dairy's while leveraging knowledge acquired from "Project Engage"
 - Prepare software templates for self-mapping potential target facilities.
 - Prepare software algorithms and templates for the onboarding of selected dairy processing customers.
 - Prepare marketing materials including websites, messaging documents, visuals, videos and recorded webinars.
 - Finalize software ready to map entire California dairy processing plants and energy consumption including the resources available at each facility and digitization gap analysis.
 - Finalize software ready to onboard participating dairy manufacturers.
 - Develop Progress Report Dairy Manufacturer Target List Report, including but not limited to: summaries of research and analysis of potential target dairies, copies of final marketing materials and sales kits used, tables and descriptions of all prepared software, and descriptions of lessons learned.

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Products:

Progress Report - Dairy Manufacturer Target List Report (Draft/Final)

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TASK 3 CONDUCT MARKETING ACTIVITIES, COMPLETE DAIRY INDUSTRY ENERGY CONSUMER MAPPING, SELECT 30 FACILITIES FOR INSTALL

The goals of this task are to (1) Get interest of dairy processing plants stakeholders in digitizing their operations while focusing on energy optimization (2) Get as many dairy plants as possible mapped on Zira and (3) select 30 facilities for install.

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The Recipient shall:

- Initiate the marketing campaign and leverage outreach channels through California dairy processors organizations such as the CLFP (California League of Food Processors) and others which will be identified and listed during Task 2 above.
- Get as many California dairy plants as possible to map their facilities on Zira in regard to energy consumption from mains meters through all major electricity consumers (cooling systems, air compressors, pumps, and mixers).
- Select 30 facilities for grant participation (ensuring the right mix of plants to benefit ML development).
- All facilities will be asked to sign a memorandum of understanding outlining what they can expect to receive from the project and what data they will need to provide to the recipient
- Select and map at least 30 dairy manufacturers completely on Zira and signed up for the project.
- Develop Progress Report Facilities Mapping, including but not limited to: Maps and tables showing locations of facilities selected for grant participation, description of marketing strategy, copies of all marketing materials used, and descriptions of lessons learned.
- Participate in a CPR meeting in accordance with subtask 1.3 (CPR Meetings).
- Prepare CPR Report #1

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Products:

- Progress Report- Facilities Mapping (Draft/Final)
- CPR Report #1

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TASK 4 INSTALL METERS AND COMMUNICATION SYSTEMS. COLLECT AND ANALYZE BASELINE DATA

The goals of this task are to (1) install any needed metering equipment; (2) set-up communications systems; and (3) collect baseline data and perform statistical calculations.

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The Recipient shall:

- 42 Conduct pilot installs as needed
 43 The Recipient will work cl
 - The Recipient will work closely with field implementor teams during the first installs to train the installation team and ensure the hardware, software, and marketing materials all work together well
 - Mass installation of meters and communications
 - o At each facility, determine what energy data already exists through submetering
 - Determine what communications existing meters are connected to

- 1 2 3
- Fill the gap- Install any additional meters and communications needed to monitor the compressed air, refrigeration, and cooling systems, to the extent approved by the customer.

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Ensure that data is configured correctly and reached the Recipient's system

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The field implementation subcontractor will do the preliminary configuration of meters and the Recipient will verify data quality and continuous flow

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Following each facility's successful installation and connection to the Recipient's system. collect one month of baseline data for the total energy consumption of the facility. If historic electric utility data can be acquired this will serve as the customer's

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Develop Progress Report – Installations, including but not limited to: calendar of events (installation date, completion date, baseline collection start and finish dates, other data as appropriate), tables of one month of data collected, notes of best practices learned and incidents of note as determined by the recipient.

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Products:

17 18 Progress Report - Installations (Draft/Final)

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TASK 5 ROLL OUT ZIRA TO ALL FACILITY PERSONNEL

21 22 The goal of this task is to provide the Recipient's energy management system to end users and team members (through their mobile phones, tablets or PCs).

23 24

The Recipient shall:

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Provide all users at facilities sites access to the Recipient's software

Onboard new customers leveraging onboarding materials including facility specific webinars, training videos, how-to articles, and meetings as applicable.

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Automate reports, alerts and notifications, process triggers

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Develop Progress Report – Roll Out, including but not limited to: copies of all onboarding materials which were used with customers and summaries of automated reports, alerts and notifications, and process triggers.

33 34 Participate in a CPR meeting in accordance with subtask 1.3 (CPR Meetings). Prepare CPR Report #2

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Products:

37 38 Progress Report- Roll Out (Draft/Final) • CPR Report #2

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TASK 6 DEPLOY AND TRAIN MACHINE LEARNING SPECIFIC FOR DAIRY PROCESSING

41 42 43 **FACILITIES** The goals of this task are to train the ML algorithm to (1) identify electricity consumption patterns (pattern recognition); (2) autonomously identify anomalies (anomaly detection); (3) identify waste of resources (classification engine) and; (4) provide energy saving recommendations (recommendation engine).

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The Recipient shall:

Use collected data and categorize it as throughput, consumption, or causal factors.

- Calculate correlations and relationships between above data streams categories.
- Run historical calculations to calculate usage patterns.
- Deploy and train ML algorithms that will match real-time collected data with historical data (patterns) to identify anomalies.
- Deploy and train algorithm that compares historical baseline and usage patterns to identify waste
- Utilize the Zira feed to provide recommendations and tools to communicate recommendations/alerts and periodic reports to encourage dairy team members to take action. Zira will also calculate an estimate of the energy cost penalties of not taking action for reporting purposes.
- Develop Deployment and Machine Learning for Dairy Processing Facilities interim report including, but not limited to the following information: Energy and throughput KPIs are available on the dashboards and continuously compared to baseline, smart anomalies and waste alerts posted on the user feed, energy recommendations are posted on the user feed, arena data available to share between sites to leverage learnings between different facilities and accelerate value realization.

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• Interim Report - Deployment and Machine Learning for Dairy Processing Facilities (Draft/Final)

TASK 7 ANALYZE DATA AND EVALUATE SAVINGS

The goal of this task is to analyze the electricity saved as a result of the Recipient's energy management system.

The Recipient shall:

- Compare the change in a facility's electricity consumption to their baseline performance
- Prepare a Progress Report- Savings and Operational Impact describing the evaluated savings and operational impact including but not limited to tables and charts to illustrate savings, and savings to be enumerated in kwh and estimates of dollar savings at a minimum and whether the energy savings goals/objectives from Section II.C were achieved.

Products:

Progress Report- Savings and Operational Impact

TASK 8 PROJECT MEASUREMENT AND VERIFICATION

The goal of this task is to conduct independent third-party measurement and verification (M&V) to measure and quantify project benefits.

The Recipient shall:

Consult with the CAM to identify and confirm the specific project benefits to be measured.
At a minimum this will include pre and post-project energy use (kilowatt hours, kilowatts,
therms), and calculations of energy cost savings and greenhouse gas emissions, and the
performance metrics from Subtask 1.12. When directed by the CAM, this can include pre

and post measurements of water use (million gallons) and other project benefits, and calculations of the resulting cost savings and greenhouse gas emission reductions.

- Enter into agreement with M&V vendor per Task 1.9
- Coordinate site visits with the M&V firm at the demonstration site(s) identified.
- Develop M&V Plan for *pre-install* measurement of:
 - Total facility energy consumption will be based on historic data from the customers utility metering (and renewable energy systems, if applicable)
 - Total facility production output will be based on historic data from the customers facility production logs
 - All data will be available on Zira for the M&V firm, available for analysis directly in the software or downloadable in any required format for external analysis.
- Perform pre-install measurements based on the M&V Plan for pre-install
- Develop M&V Plan for **post-install** measurement of:
 - Post install facility energy consumption per unit of product will be based on data from the customers utility (and renewable energy systems, if applicable), which will be in Zira
 - Post install total facility production output will be based on historic data from the customers facility production logs, which will be in Zira.
 - Post install energy consumption and benchmarking data for individual machines will be available for system specific analysis.
 - All data will be available on Zira for the M&V firm, available for analysis directly in the software or downloadable in any required format for external analysis.
- Perform post-install measurements based on M&V Plan for post-install
- Prepare M&V Findings Reports for each demonstration site(s) that includes M&V Plan, pre and post install measurements, analysis, and results to show whether the goals and objectives from Section II.C (e.g., electricity savings of 20% or more per production output) and the performance metrics from Subtask 1.12 were met, and other task as agreed with the CAM.

Products:

M&V Findings Report(s)

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The goal of this task is to report the benefits resulting from this project.

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The Recipient shall:

- Complete the Initial Project Benefits Questionnaire. The Initial Project Benefits Questionnaire shall be initially completed by the Recipient with 'Kick-off' selected for the 'Relevant data collection period' and submitted to the CAM for review and approval.
- Complete the *Annual Survey* by December 15th of each year. The Annual Survey includes but is not limited to the following information:
 - Technology commercialization progress
 - New media and publications
 - Company growth
 - o Follow-on funding and awards received
- Complete the *Final Project Benefits Questionnaire*. The *Final Project Benefits Questionnaire* shall be completed by the Recipient with 'Final' selected for the 'Relevant data collection period' and submitted to the CAM for review and approval.
- Respond to CAM questions regarding the questionnaire drafts.
- Complete and update the project profile on the CEC's public online project and recipient directory on the Energize Innovation website (www.energizeinnovation.fund), and provide Documentation of Project Profile on EnergizeInnovation.fund, including the profile link.
- If the Prime Recipient is an Innovation Partner on the project, complete and update the
 organizational profile on the CEC's public online project and recipient directory on the
 Energize Innovation website (www.energizeinnovation.fund), and provide
 Documentation of Organization Profile on EnergizeInnovation.fund, including the profile
 link.

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Products:

- Initial Project Benefits Questionnaire
- Annual Survey(s)
- Final Project Benefits Questionnaire
- Documentation of Project Profile on EnergizeInnovation.fund
- Documentation of Organization Profile on EnergizeInnovation.fund

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TASK 10 TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES

The goal of this task is to conduct activities that will accelerate the commercial adoption of the technology being supported under this agreement. Eligible activities include, but are not limited to, the following:

- Scale-up analysis including manufacturing analysis, independent design verification, and process improvement efforts.
- Technology verification testing, or application to a test bed program located in California.
- Legal services or licensing to secure necessary intellectual property to further develop the technology

	Zira Group inc. (DDA Lightapp)			
1 2 3 4	 Market research, business plan development, and cost-performance modeling. Entry into an incubator or accelerator program located in California. 			
5				
6	The Recipient Shall:			
7 8	 Develop and submit a Technology Transfer Plan (Draft/Final) that identifies the proposed activities the recipient will conduct to accelerate the successful commercia 			
9	adoption of the technology.			
10 11 12	 Present the <i>Draft Technology Transfer Plan</i> to the TAC for feedback and comments. Develop and submit a <i>Summary of TAC Comments</i> that summarizes comments received from the TAC members on the <i>Draft Technology Transfer Plan</i>. This 			
13	document will identify:			
14 15	 TAC comments the recipient proposes to incorporate into the <i>Final Technology Transfer Plan</i>. 			
16	 TAC comments the recipient does not propose to incorporate with and 			
17	explanation why.			
18	 Submit the Final Technology Transfer Plan to the CAM for approval. 			
19	 Implement activities identified in Final Technology Transfer Plan. 			
20	Develop and submit a <i>Technology Transfer Summary Report (Draft/Final)</i> that			
21	includes high level summaries of the activities, results, and lessons learned of tasks			
22 23	performed relating to implementing the <i>Final Technology Transfer Plan</i> . This report should not include any proprietary information.			
24	 When directed by the CAM, develop presentation materials for an CEC- sponsored 			
25	conference/workshop(s) on the project.			
26	 When directed by the CAM, participate in the annual EPIC symposium(s) sponsored 			
27	by the CEC.			
28 29	 Provide at least (6) six High Quality Digital Photographs (minimum resolution of 1300x500 pixels in landscape ratio) of pre and post technology installation at the 			
30	project sites or related project photographs.			
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32	Products:			
33	Technology Transfer Plan (Draft/Final)			
34	Summary of TAC Comments The state of t			
35	Technology Transfer Summary Report (Draft/Final)			
36	High Quality Digital Photographs			
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38	V. BROJECT COLIEBLILE			
39	V. PROJECT SCHEDULE			
40 41	Please see the attached Excel spreadsheet			
42	Please see the attached Excel spreadsheet.			

RESOLUTION NO: 21-06-09-16b

STATE OF CALIFORNIA

STATE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: ZIRA GROUP INC. DBA LIGHTAPP

RESOLVED, that the State Energy Resources Conservation and Development Commission (CEC) adopts the staff CEQA findings contained in the Agreement or Amendment Request Form (as applicable); and

RESOLVED, that the CEC approves Agreement EPC-20-047 with Zira Group Inc. DBA Lightapp for a \$4,227,648 grant to demonstrate and deploy advanced energy management software solutions that leverages artificial intelligence, machine learning and other data to maximize energy efficiency at California dairy processing facilities; and

FURTHER BE IT RESOLVED, that the Executive Director or his/her designee shall execute the same on behalf of the CEC.

CERTIFICATION

The undersigned Secretariat to the CEC does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the CEC held on June 9, 2021.

AYE: NAY: ABSENT:		
ABSTAIN:		
	Patricia Carlos	
	Secretariat	