

New Agreement EPC-15-094 (To be completed by CGL Office)

Division	Agreement Manager:	MS-	Phone
ERDD	Heather Bird	51	916-327-1473

Recipient's Legal Name	Federal ID Number
Electric Power Research Institute, Inc.	23-7175375

Title of Project
Demonstration of Affordable, Comfortable, Grid Integrated Zero Net Energy Communities

Term and Amount	Start Date	End Date	Amount
	6/15/2016	3/30/2020	\$ 4,942,809

Business Meeting Information

ARFVTP agreements under \$75K delegated to Executive Director.

Proposed Business Meeting Date	6/14/2016	<input type="checkbox"/> Consent	<input checked="" type="checkbox"/> Discussion
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Business Meeting Presenter	Heather Bird	Time Needed:	10 minutes
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Please select one list serve. EPIC (Electric Program Investment Charge)

Agenda Item Subject and Description

ELECTRIC POWER RESEARCH INSTITUTE, INC. (EPRI).

i. CALIFORNIA ENVIRONMENTAL QUALITY ACT FINDINGS.

Proposed resolution making findings for three project sites:

(a) City of Lake Forest: Finding that, based on the lead agency, City of Lake Forest's, Final Initial Study, Mitigated Negative Declaration and Mitigation, Monitoring, and Reporting Program and resolution adopting the Mitigated Negative Declaration and approving the Monitoring, and Reporting Program, the work under the proposed project presents no new significant or substantially more severe environmental impacts beyond those already considered.

(b) City of Clovis: (1) Findings that, based on the lead agency, City of Clovis's, resolution certifying the Final Environmental Impact Report, adopting Mitigation Monitoring and Reporting Program, and making findings under CEQA including the adoption of a Statement of Overriding Considerations, the work under the proposed project presents no new significant or substantially more severe environmental impacts beyond those already considered; and (2) Adopting a Statement of Overriding Considerations.

(c) City of Woodland: (1) Finding that, based on the lead agency, City of Woodland's, resolution certifying the Final Environmental Impact Report, and subsequent amendments thereto, adopting a Mitigation Monitoring Plan and making findings under CEQA, including the issuance of a Statement of Overriding Considerations, the work under the proposed project presents no new significant or substantially more severe environmental impacts beyond those already considered; and (2) Adopting a Statement of Overriding Considerations.

ii. Proposed resolution approving Agreement EPC-15-094 with Electric Power Research Institute for a \$4,942,809 grant to demonstrate cost competitive ZNE design strategies combining occupant needs with technology solutions to create new pathways at three residential communities. The demonstrations will be in the California cities of Lake Forest, Clovis, and Woodland.

GRANT REQUEST FORM (GRF)

CEC-270 (Revised 10/2015)

CALIFORNIA ENERGY COMMISSION



List all subcontractors (major and minor) and equipment vendors: (attach additional sheets as necessary)	
Legal Company Name:	Budget
BIRAenergy	\$ 572,926
Itron, Inc.	\$ 302,237
Team 5 Properties dba De Young Properties	\$ 194,600
Meritage Homes Corporation	\$ 530,000
UC Davis Energy Efficiency Center	\$ 405,000
Karl Johnson Consulting (Sub to BIRAenergy)	\$ 99,000
by Vava (Sub to BIRAenergy)	\$ 80,100
Schamber Electric (Sub to Meritage)	\$ 80,000
Clean Energy Group aka CEG, Inc. (Sub to BIRAenergy)	\$ 68,000
A.Y. Ahmed (Sub to BIRAenergy)	\$ 50,000
Proclus Engineering	\$ 35,000
TBD Electrical Contractor	\$ 39,000
TBD Electrical Contractor #2 (Sub to Meritage- Norcal)	\$ 70,000
TBD Roofing Contractor	\$ 21,400
TBD Roofing Contractor #2 (Sub to Meritage)	\$ 57,000
TBD Roofing Contractor #3 (Sub to Meritage)	\$ 43,000
TBD Market Outreach Contractor (Sub to Meritage)	\$ 20,000
TBD Market Outreach Contractor #2	\$ 30,000
TBD Design Contractor	\$ 25,000
TBD Design Contractor #2 (Sub to Meritage)	\$ 50,000
TBD Analytics	\$ 25,000

List all key partners: (attach additional sheets as necessary)
Legal Company Name:

Budget Information			
Funding Source	Funding Year of Appropriation	Budget List No.	Amount
EPIC	14-15	301.001B	\$3,207,419
EPIC	15-16	301.001C	\$1,735,390
R&D Program Area:	EERO: Buildings	TOTAL:	\$4,942,809
Explanation for "Other" selection			
Reimbursement Contract #:		Federal Agreement #:	

Recipient's Administrator/ Officer		Recipient's Project Manager	
Name:	David Morrison	Name:	Ramachandran Narayanamurthy
Address:	942 Corridor Park Blvd	Address:	3420 Hillview Ave
City, State, Zip:	Knoxville, TN 37932-3723	City, State, Zip:	Palo Alto, CA 94304-1355
Phone:	865-218-8104 / Fax: - -	Phone:	650-855-2419 / Fax: - -
E-Mail:	DMorrison@epri.com	E-Mail:	rnarayanamurthy@epri.com

GRANT REQUEST FORM (GRF)



Selection Process Used	
<input checked="" type="checkbox"/> Competitive Solicitation	Solicitation #: GFO-15-308
<input type="checkbox"/> First Come First Served Solicitation	

The following items should be attached to this GRF	
1. Exhibit A, Scope of Work	<input checked="" type="checkbox"/> Attached
2. Exhibit B, Budget Detail	<input checked="" type="checkbox"/> Attached
3. CEC 105, Questionnaire for Identifying Conflicts	<input checked="" type="checkbox"/> Attached
4. Recipient Resolution	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Attached
5. CEQA Documentation	<input type="checkbox"/> N/A <input checked="" type="checkbox"/> Attached

_____	_____	_____	_____	_____	_____
Agreement Manager	Date	Office Manager	Date	Deputy Director	Date

State of California

California Natural Resources Agency

M e m o r a n d u m

To: EPC-15-094, City of Lake Forest (Encanto Residential Project)

Date: June 1, 2016

Telephone: 916-327-2547

From: Heather Bird

Subject: California Environmental Quality Act Analysis for EPC-15-094

I am a Professional Scientist in the Research and Development Division, California Energy Commission, and am the Commission's Agreement Manager for proposed Agreement EPC-15-094 ("Agreement"), Demonstration of Affordable, Comfortable, Grid Integrated Zero Net Energy Communities.

Pursuant to my work in developing the Agreement, including the Scope of Work for the Agreement, I have reviewed the City of Lake Forest's (the "City") California Environmental Quality Act ("CEQA") documents for the Encanto Residential Project (the "Encanto Residential Project"), a 5.75 acre subdivision plan, located at 25192 Commercentre Drive. The City's CEQA documents for the Encanto Residential Project include the 1991 Final Initial Study/Mitigated Negative Declaration and associated appendices for the Encanto Residential Project; the City's 2015 Resolution No. 2015-57 approving tentative tract map 17810 where the Encanto Residential Project is located (the Agreement will fund demonstration grid integrated zero net energy upgrades to homes within the Encanto Residential Project); and the City's December 15, 2015 Resolution adopting the Mitigated Negative Declaration as modified and approving a mitigation monitoring and reporting program as modified.

Based on my review and consideration of the above documents, it is my independent and professional opinion that, since the above CEQA documents have been finalized, there have been no new project changes, and no new, additional, or increased significant environmental impacts have occurred. Furthermore, I have not identified any new information which would change the conclusions of the City's CEQA documents, or render those conclusions inadequate.

It is also my independent and professional opinion that the work to be performed under the proposed Agreement falls within the scope of the City's CEQA documents, and that the Agreement will not result in any new significant environmental impacts. Finally, I have not identified any new mitigation measures, within the Commission's authority, that would lessen or further mitigate the impacts of the Encanto Residential Project.

The reasons for my conclusions are as follows:

The proposed Agreement includes two main construction components: (1) Upgrading equipment efficiencies from the baseline energy code requirements; and (2) Altering construction materials and techniques used to build the new residential structures. The proposed Agreement would fund Zero Net Energy upgrades for 20-60 single family detached residences within the Encanto Residential Project. All of the construction and operation for the proposed Agreement will be within the activities evaluated by the CEQA documents identified above. The scope of work of the proposed Agreement has no omissions from, or conflicts of information with, the City's 1991 Final Initial Study/Mitigated Negative Declaration, associated appendices, or other documents identified above.

Land Use:

The proposed Agreement will not have any impact on land use, and will not change the impacts identified in the City's CEQA documents.

Agriculture:

The proposed Agreement will not have any impact on agriculture, and will not change the impacts identified in the City's CEQA documents.

Hydrology and Water Quality:

The proposed Agreement will not have any impact on hydrology and water quality, and will not change the impacts identified in the City's CEQA documents.

Biological Resources:

The proposed Agreement will not have any impact on biological resources, and will not change the impacts identified in the City's CEQA documents.

Geology and Soils:

The proposed Agreement will not have any impact on geology and soils, and will not change the impacts identified in the City's CEQA documents.

Hazards:

The proposed Agreement will not have any impact on hazards, and will not change the impacts identified in the City's CEQA documents.

Transportation & Circulation:

The proposed Agreement will not have any impact on transportation and circulation, and will not change the impacts identified in the City's CEQA documents.

Air Quality:

GHG emissions associated with the proposed Encanto Residential Project would occur over the short term (approximately less than 2 years) from construction activities and would consist primarily of emissions from equipment exhaust. The proposed Encanto Residential Project would not exceed any operational emissions thresholds established by the SCAQMD. Construction of the proposed Encanto Residential Project would result in average emissions of 18.4 MT of CO₂e per year over the course of 30 years. The estimated construction emissions would be below the SCAQMD's threshold criteria of 3,500 MT of CO₂e per year. Therefore, Encanto Residential Project construction would be considered to have a less than significant impact related to GHG emissions and would not, directly or indirectly, have a significant impact on the environment. Therefore, no mitigation is required.

Population and Housing:

The proposed Agreement will not have any impact on population and housing, and will not change the impacts identified in the City's CEQA documents.

Public Services – Schools, Police, Fire, Library, Parks/Recreation:

The proposed Agreement will not have any impact on public services, and will not change the impacts identified in the City's CEQA documents.

Noise:

The proposed Agreement will not have any impact on noise, and will not change the impacts identified in the City's CEQA documents.

Utilities – Water, Wastewater, electricity, Natural gas, waste management, telecommunicationsWastewater:

The proposed Encanto Residential Project is not an industrial facility and is not subject to the wastewater treatment requirements of the Regional Water Quality Control Board (RWQCB). The Encanto Residential Project site is within the sewer service area of the IRWD's (Irvine Ranch Water District) Michelson Water Reclamation Plant (MWRP). Because IRWD's MWRP is considered a POTW (publically owned treatment works), operational discharge flows treated at IRWD's MWRP would be required to comply with applicable WDRs issued by the Santa Ana RWQCB. Compliance with conditions or permit requirements established by the City as well as WDRs outlined by the Santa Ana RWQCB would ensure that wastewater discharges coming from the Encanto Residential Project site and treated by the wastewater treatment facility system would not exceed applicable Santa Ana RWQCB wastewater treatment requirements. Therefore, a less than significant impact associated with this issue would occur, and no mitigation is required.

Water:

IRWD would be the primary water supplier to the Encanto Residential Project site. IRWD provides potable and non-potable water supply services to a population of approximately 370,000 residents. Approximately 25 percent of IRWD's supply is recycled water. Therefore, given that the proposed Encanto Residential Project would utilize a small percent of the daily capacity of the existing pipe in Commercentre, and IRWD's standard requirements for facility planning, adequate water distribution facilities would exist to serve the Encanto Residential Project. Encanto Residential Project impacts related to the existing water distribution facilities would be less than significant, and no mitigation is required.

Electricity:

Not addressed in the Final Initial Study/Mitigated Negative Declaration.

Natural Gas:

Not addressed in the Final Initial Study/Mitigated Negative Declaration.

Cultural Resources:

The proposed Agreement will not have any impact on cultural resource, and will not change the impacts identified in the City's CEQA documents.

Aesthetics:

The proposed Agreement will not have any impact on aesthetics, and will not change the impacts identified in the City's CEQA documents.

State of California

California Natural Resources Agency

Memorandum

To: EPC-15-094, City of Clovis (Sierra Crest)

Date: June 1, 2016

Telephone: 916-327-1473

From: Heather Bird

Subject: California Environmental Quality Act Analysis for EPC-15-094

I am a Professional Scientist in the Research and Development Division, California Energy Commission, and am the Commission's Agreement Manager for proposed Agreement EPIC -15-094 ("Agreement"), Demonstration of Affordable, Comfortable, Grid Integrated Zero Net Energy Communities.

Pursuant to my work in developing the Agreement, including the Scope of Work for the Agreement, I have reviewed the City of Clovis' (the "City") California Environmental Quality Act ("CEQA") documents for the Sierra Crest single family residential subdivision project ("Sierra Crest") on 9.47 acres of property located near the southwest corner of Alluvial and Armstrong Avenues. The City's CEQA documents for the plan include the August 2014 Final Environmental Impact Report (FEIR) for the General Plan and Development Code Update; August 25, 2014 Resolution of the City of Clovis certifying the FEIR, adopting CEQA findings of fact and a statement of overriding considerations, and adopting a mitigation monitoring program; October 22, 2015 Resolution 15-61 approving tentative tract map TM6117; and tentative tract map TM6117 where Sierra Crest is located. The Agreement will fund demonstration grid integrated zero net energy upgrades to homes within Sierra Crest.

Based on my review and consideration of the above documents, it is my independent and professional opinion that, since the above CEQA documents have been finalized, there have been no new project changes, and no new, additional, or increased significant environmental impacts have occurred. Furthermore, I have not identified any new information which would change the conclusions of the City's CEQA documents, or render those conclusions inadequate.

It is also my independent and professional opinion that the work to be performed under the proposed Agreement falls within the scope of the City's CEQA documents, and that the Agreement will not result in any new significant environmental impacts. Finally, I have not identified any new mitigation measures, within the Commission's authority, that would lessen or further mitigate the impacts of the Sierra Crest single family residential subdivision project.

The reasons for my conclusions are as follows:

The proposed Agreement includes two main construction components: (1) Upgrading equipment efficiencies from the baseline energy code requirements; and (2) Altering construction materials and techniques used to build the new residential structures. The proposed Agreement would fund Zero Net Energy upgrades for 20 to 60 single family residences within Sierra Crest. All of the construction and operation for the proposed Agreement will be within the activities evaluated by the CEQA documents identified above. The scope of work of the proposed Agreement has no omissions from, or conflicts of information with, the City's FEIR or other documents identified above.

Agricultural Resources:

The proposed Agreement will not have any impact on agricultural resources, and will not change the impacts identified in the City's CEQA documents.

The Statement of Overriding Considerations identifies several immitigable items under the agricultural resources category including:

- Impact 5.2-1, Loss of Important Farmland. Buildout of the proposed General Plan Update would convert 3,206 acres of Prime Farmland, 1,834 acres of Farmland of Statewide Importance, and 1,585 acres of Unique Farmland to nonagricultural land uses.
- Impact 5.2-2, Conversion of Agriculture to Nonagricultural Use. The General Plan Update would change the land use designation of 4,610 acres designated for agriculture to other land use designations.

- Impact 5.2-3, Williamson Act. General Plan Update buildout would convert 3,047 acres of farmland bearing Williamson act contracts to nonagricultural land uses.

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Land Use:

The proposed Agreement will not have any impact on land use, and will not change the impacts identified in the City's CEQA documents.

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Public Facilities:

The proposed Agreement will not have any impact on public facilities, and will not change the impacts identified in the City's CEQA documents.

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Circulation:

The proposed Agreement will not have any impact on circulation, and will not change the impacts identified in the City's CEQA documents.

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Air Quality

The proposed Agreement will not have any impact on air quality, and will not change the impacts identified in the City's CEQA documents.

The Statement of Overriding Considerations identifies several immitigable items under the air quality category including:

- Impact 5.3-1, Inconsistency with Air Quality Management Plan. The General Plan Update would be consistent with the San Joaquin Valley Air Pollution Control District's (SJVAPCD) control measures; however, development associated with the buildout of the General Plan Update would exceed the SJVAPCD significance thresholds and thus would be inconsistent with the applicable air quality management plan.
- Impact 5.3-2, Construction Emissions. Construction activities associated with buildout of the General Plan Update would generate short-term emissions that exceed SJVAPCD'S significance threshold criteria and would contribute to the ozone and particulate matter nonattainment designations of the SJV Air Basin.
- Impact 5.3-3, Long-Term Emissions. Implementation of the Land Use Plan of the proposed General Plan Update would generate long-term emissions that would exceed the SJVAPCD'S significance threshold criteria and cumulatively contribute to the ozone and particulate matter nonattainment designations of the SJVAB.

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Open Space and Recreation:

The proposed Agreement will not have any impact on open space and recreation, and will not change the impacts identified in the City's CEQA documents.

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Cultural Resources

The proposed Agreement will not have any impact on cultural resources, and will not change the impacts identified in the City's CEQA documents.

The Statement of Overriding Considerations identifies several immitigable items under the cultural resources category including:

- Impact 5.5-1, Historic Resources. The proposed General Plan Update would allow development in areas that have historic resources identified by previous cultural resource surveys and the Fresno County List of Historic Places. Development in these areas would potentially disturb historic resources.

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Greenhouse Gas Emissions

The proposed Agreement will not have any impact on greenhouse gas emissions, and will not change the impacts identified in the City's CEQA documents.

The Statement of Overriding Considerations identifies several immitigable items under the greenhouse gas emissions category including:

- Impact 5.7-1, Greenhouse Gas Emissions. Implementation of the proposed General Plan Update would result in a substantial increase in GHG emissions for year 2035 and beyond year 2035 (Full Buildout) compared to existing conditions. Additionally, though communitywide GHG emissions at year 2035 and Full Buildout would be less than business-as-usual (BAU) conditions, the proposed General Plan Update would not meet the SJVAPCD's threshold of 29 percent below BAU or the long-term reduction target of Executive Order S-03-05. The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Hydrology and Water Quality

The proposed Agreement will not have any impact on hydrology and water quality, and will not change the impacts identified in the City's CEQA documents.

The Statement of Overriding Considerations identifies several immitigable items under the hydrology and water quality category including:

- Impact 5.9-2, Groundwater Use. Development pursuant to the General Plan Update would increase the demand on groundwater use and also increase impervious surfaces in the Plan Area, which would impact opportunities for groundwater recharge. The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Environmental Quality:

The proposed building of Zero Net Energy homes under the Agreement would not impair environmental quality. To the contrary, this Agreement would reduce the overall on-site emissions from those identified for the Plan. The Agreement would reduce greenhouse gas emissions by reducing net energy consumption through: (1) Constructing energy efficient homes compared to the baseline energy code requirements; and (2) Installing high efficiency appliances and on-site renewable generation. Therefore, no new significant air emissions, beyond those originally identified in the City's CEQA documents, either for criteria pollutants or toxics, would occur should the Energy Commission approve the Agreement.

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Noise and Vibration:

The proposed Agreement will not have any impact on noise and vibration, and will not change the impacts identified in the City's CEQA documents.

The Statement of Overriding Considerations identifies several immitigable items under the noise and vibration quality category including:

- Impact 5.12-1, Traffic Noise. Traffic-related noise impacts from the implementation of the General Plan are significant. Traffic generated by buildout of the General Plan Update would substantially increase noise along major traffic corridors in the Plan Area and could expose existing and planned residents to substantial noise levels.
- Impact 5.12-4, Construction Vibrations. Buildout of the individual land uses and projects for implementation of the General Plan could expose sensitive uses to strong groundborne vibration.
- Impact 5.12-5, Construction Noise. Construction activities associated with buildout of the individual land uses and projects for implementation of the General Plan would substantially elevate noise levels in the vicinity of noise-sensitive land uses.

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Population and Housing:

The proposed Agreement will not have any impact on population and housing, and will not change the impacts identified in the City's CEQA documents.

The Statement of Overriding Considerations identifies several immitigable items under the population and housing category including:

- Impact 5.13-1, Population Growth. Under the 2035 Scenario, buildout of the General Plan Update would result in similar population growth as projected by the Fresno COG; however, Full Buildout would substantially increase population in the Plan Area by over 150 percent by year 2080, which is also beyond Fresno COG's planning horizon.
- Impact 5.16-1, Roadway Segment Operation. Upon implementation of the land uses and circulation element included in the General Plan Update, one roadway segment in the City of Clovis and several segments in the County of Fresno are projected to operate at unacceptable level of service (LOS) in 2035.

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

State of California

California Natural Resources Agency

M e m o r a n d u m

To: EPC-15-094, City of Woodland, Spring Lake (Formerly known as Turn of the Century)

Date: June 1, 2016

Telephone: 916-327-1473

From: Heather Bird

Subject: California Environmental Quality Act Analysis for EPC-15-094

I am a Professional Scientist in the Research and Development Division, California Energy Commission, and am the Commission's Agreement Manager for proposed Agreement EPIC -15-094 ("Agreement"), Demonstration of Affordable, Comfortable, Grid Integrated Zero Net Energy Communities.

Pursuant to my work in developing the Agreement, including the Scope of Work for the Agreement, I have reviewed the City of Woodland's (the "City's") California Environmental Quality Act ("CEQA") documents for Spring Lake Specific Plan (formerly known as Turn of the Century Specific Plan) ("Spring Lake") a 1,097 acre subdivision plan. The City's CEQA documents for the plan include the 1999 Turn of the Century Specific Plan Final Environmental Impact Report (EIR) ; August 15, 2000 City resolution certifying the FEIR; the June 5, 2014 City Resolution adopting EIR Addendum #10 and detailing all prior addendum approvals by the City; City Resolution amending the Spring Lake Specific Plan and Subdivision Map 5048; and the December 18, 2001 City Resolution making findings of fact, issuing a statement of overriding considerations, adopting a CEQA Addendum, adopting a Mitigation Monitoring Plan, making a determination of General Plan consistency, and approving the Spring Lake Specific Plan.

The City's FEIR, identified six areas in which the Plan would create significant, but unavoidable, environmental impacts. These areas are: Agricultural Resources; Hydrology, Drainage and Water Quality; Biological Resources; Air Quality; Noise and; Public Health and Safety. In each of these areas, the City concluded that specific economic, social, or other considerations make infeasible the mitigation measures or Plan alternatives identified in the FEIR. (Pg 3-2)

Based on my review and consideration of the above documents, it is my independent and professional opinion that, since the above CEQA documents have been finalized, there have been no new project changes, and no new, additional, or increased significant environmental impacts have occurred. Furthermore, I have not identified any new information which that change the conclusions of the City's CEQA documents, or render those conclusions inadequate.

It is also my independent and professional opinion that the work to be performed under the proposed Agreement falls within the scope of the City's CEQA documents, and that the Agreement will not result in any new significant environmental impacts. Finally, I have not identified any new mitigation measures, within the Commission's authority, that would lessen or further mitigate the impacts of The Plan.

The reasons for my conclusions are as follows:

The proposed Agreement includes two main construction components: (1) Upgrading equipment efficiencies from the baseline energy code requirements; and (2) Altering construction materials and techniques used to build the new residential structures. The proposed Agreement would fund Zero Net Energy upgrades for 20-60 single family residences within the Plan. All of the construction and operation for the proposed Agreement will be within the activities evaluated by the Plan CEQA documents identified above. The scope of work of the proposed Agreement has no omissions from, or conflicts of information with, the City's 1999 FEIR or the 2003 Supplement to the 1999 EIR.

Agricultural Resources:

The proposed Agreement will not have any impact on agriculture, and will not change the impacts identified in the City's CEQA documents.

The Statement of Overriding Considerations identifies several immitigable items under the agricultural resources category including:

- Impact 4.2-1, Project-level loss of farmland
- Impact 4.2-2, Impacts to Williamson Act contracts
- Impact 4.2-4, Impacts to Agricultural Viability
- Impact 4.2-6, Cumulative loss of farmland
- Impact 4.2-7, Cumulative Impacts to Agricultural Viability

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Hydrology, Drainage and Water Quality:

The proposed Agreement will not have any impact on hydrology and water quality, and will not change the impacts identified in the City's CEQA documents.

The Statement of Overriding Considerations identifies several immitigable items under the hydrology, drainage and water quality category including:

- Impact 4.4-5, Impacts to groundwater levels

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Biological Resources:

The proposed Agreement will not have any impact on biological resources, and will not change the impacts identified in the City's CEQA documents.

The Statement of Overriding Considerations identifies several immitigable items under the biological resources category including:

- Impact 4.5-4, Loss of raptor foraging habitat
- Impact 4.5-9, Cumulative loss of habitat

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Traffic and Circulation:

The proposed Agreement will not have any impact on transportation and circulation, and will not change the impacts identified in the City's CEQA documents.

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Air Quality:

The proposed building of Zero Net Energy homes under the Agreement would not increase local air emissions. To the contrary, this Agreement would reduce the overall on-site emissions from those identified for the Plan. The Agreement would reduce greenhouse gas emissions by reducing net energy consumption through: (1) Constructing energy efficient homes compared to the baseline energy code requirements; and (2) Installing high efficiency appliances and on-site renewable generation. Therefore, no new significant air emissions, beyond those originally identified in the City's CEQA documents, either for criteria pollutants or toxics, would occur should the Energy Commission approve the Agreement.

The Statement of Overriding Considerations identifies several immitigable items under the air quality category including:

- Impact 4.7-3, Project-generated air emissions
- Impact 4.7-6, Cumulative air emissions

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Noise:

The proposed Agreement will not have any impact on noise, and will not change the impacts identified in the City's CEQA documents.

The Statement of Overriding Considerations identifies several immitigable items under the noise category including:

- Impact 4.8-8, Project-generated noise impacts
- Impact 4.8-9, Cumulative noise impacts

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

Public Health and Safety:

The proposed building of Zero Net Energy homes under the Agreement would not have a negative impact on public health and safety.

The Statement of Overriding Considerations identifies several immitigable items under the public health and safety category including:

- Impact 4.12-4, Project-level exposure to nuisance pests (black gnats)
- Impact 4.12-8, Cumulative exposure to nuisance pest (black gnats)

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

California Energy Commission

June 14, 2016 Business Meeting – Agenda Item #17b

**Electric Power Research Institute (EPRI) Project:
“Demonstration of Affordable, Comfortable, Grid Integrated Zero Net
Energy Communities” (EPC-15-094)**

The full California Environmental Quality Act (CEQA) supporting documentation for EPC-15-094 can be obtained at:

http://www.energy.ca.gov/research/epic/environmental_review_documents.html

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR ¹	Task Name
1		General Project Tasks
2	X	Design of Zero Net Energy Communities
3	X	Construction of ZNE Communities
4	X	Customer Education, Occupant Acceptance, and M&V
5		Evaluation of Project Benefits
6		Technology/Knowledge Transfer Activities

B. Acronym/Term List

Acronym/Term	Meaning
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CPR	Critical Project Review
EE	Energy Efficiency
GHG	Greenhouse Gas
HVAC	Heating, Ventilating and Air Conditioning
NEM	Net Energy Metering
TAC	Technical Advisory Committee
TDV	Time Dependent Valuation
ZNE	Zero Net Energy

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

A. Purpose of Agreement

The purpose of this Agreement is to demonstrate that California can reach its goal of all new homes being Zero Net Energy (ZNE) by 2020 through large scale demonstration of Zero Net Energy Communities with multiple builders. This agreement will:

- Demonstrate cost effective and technical homes to be available at near market prices.
- Utilize the demonstrations to study community scale design of both homes and utility infrastructure.
- Demonstrate how customers perceive, engage and adopt ZNE homes.

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.

- Enable builders to overcome any hesitance with new technology and warranty issues.

This agreement will develop a large scale, detailed database on operation of ZNE homes to understand load shapes and customer preferences, and to obtain independent 3rd party verification of their performance. This agreement will also illustrate how the range of distributed energy resources (DERs,) present in ZNE communities, can be used to provide grid services and balance variability at the distribution grid, in addition to providing pathways for ZNE adoption in changing net energy metering (NEM) scenarios.

B. Problem/Solution Statement

Problem

California's ZNE and global climate change goals will require a huge increase in building and end-use system efficiency, including integration with renewable power. The immediate goal of all new homes being ZNE by 2020 as recommended by the California Public Utilities Commission's Action Plan² has little time to overcome significant market barriers including better understanding of cost effectiveness, technical feasibility and operational performance. There have been many efforts at one-off showcases of ZNE to show technology pathways, but not many field demonstrations that show a pathway to achieving acceptance at a large scale.

In one of the few efforts, the recipient, working with subcontractors, demonstrated technical and market feasibility of building ZNE homes, through California's first ZNE neighborhood in Fontana, California. In this effort, 20 homes were built on two distribution transformers, sold and will be occupied: the entire process taking 10 months from design to occupancy. The additional cost for these homes was minimal (around \$18000 per home), but was absorbed through the project to accomplish project timelines for measuring grid impacts. These homes were built for an incremental cost of only around \$20,000 including the whole home monitoring package (about 40 data points per home) and purchased Solar PV (PV), to reach ZNE. This still leaves the question unanswered about customer acceptance, builder acceptance of advanced construction techniques for better envelopes, as well as leaving open the question of community design and long term monitoring.

Long term monitoring is critical to understanding persistence and performance of advanced construction techniques as well as new technologies. Another constraint is that the state pathway to reach ZNE will be through the California Code of Regulations Title 24 Buildings Standards Code. Given the process timelines, it is imperative that the data be collected on the community scale ZNE by the end of 2017 for incorporation in future code cycles.

There is also the unanswered question of how ZNE will impact the electric grid. To this end, ZNE can also be seen as the integration of various end-use device technologies, but with cost effectiveness trade-offs built into the evaluation. This requires integration of end use devices and PV, with controls to manage operation and load shapes, and possibly a use for energy storage systems to provide some support.

² <http://californiaznehomes.epaperflip.com/v/New-Residential-ZNE-Action-Plan-2015-2020>

Solution

This project will demonstrate cost-competitive ZNE design strategies combining occupant needs with technology solutions to create new pathways at three residential communities. The demonstrations will be leveraged to achieve the goals of cost effectiveness and affordability for the customer, overcome customer apprehension, establish a track record of new technology for builders, enable distribution grid integration, create a planning process for ZNE communities, evaluate community PV, and look at the impact of future changes to NEM on ZNE cost effectiveness. In addition, ZNE is based on California Code of Regulations Title 24 Buildings Standards Code for heating, ventilating and air conditioning (HVAC), water heating and lighting loads, leaving plug loads and appliances (behavioral loads) free floating. This project will also aim to understand the operation and energy use of the unregulated loads.

As part of this research, the recipient will partner with subcontractors to demonstrate the feasibility of large scale ZNE communities, as well as to answer additional research questions on customer acceptance and builders' acceptance.

C. Goals and Objectives of the Agreement

Agreement Goals

The goals of this Agreement are to:

- Construct and demonstrate the operation of multiple ZNE communities to illustrate technical feasibility, economic viability and multiple technology pathways.
- Better understand how to implement community design of ZNE communities, perceptions of customers and builders, and the integration of ZNE communities into the electric grid.
- Obtain detailed long term data on ZNE communities that provides a better understanding of their operation as well as customer preferences.
- Demonstrate that ZNE can be accomplished with multiple builders in multiple communities.
- Demonstrate that ZNE can be accomplished at market rate, and in a manner that is cash flow positive to occupants.
- Standardize ZNE packages that can be delivered across multiple climate zones that builders can use to scale.
- Obtain substantial monitored data to understand the actual performance of ZNE communities and homes.
- Identify the distribution grid impacts of ZNE.
- Recommend and develop new elements in California Code of Regulations Title 24 Buildings Standards Code that enable the pathway to ZNE in a manner that works for customers, utilities and builders.
- Understand impacts related to electrification of heating loads to meet California's long term carbon goals.
- Provide possible design of utility programs that enable attaining ZNE (for example, designing or adopting changes to the California Advanced Homes Program (CAHP)).

To achieve these goals, the project will pursue the following pathways:

1. Demonstrate that ZNE homes are cost effective and affordable. In an expensive California market, where affordability is already on the edge for many homebuyers, ZNE should not be a barrier to financial qualification.
2. Address perceived technology risks of ZNE homes by customers. A home should still be comfortable, affordable and live-able, without adding additional concerns.
3. Address homebuilders' concerns over additional warranty and liability claims due to new technologies and techniques.
4. Demonstrate how ZNE homes can help with utility grid management and accentuate two way flows as they reduce load availability to absorb PV variation due to lower energy use for HVAC, water heating, etc., which leads to greater grid export of PV. Elements such as controllable loads and energy storage might need to be integrated and controlled at the aggregate level to mitigate electric system variability.
5. Demonstrate community design to show developers, architects and utilities the layout of streets, lot orientation, with elevations, and appropriate sized distribution systems.
6. Demonstrate operational cost savings to financial agents, such as mortgage brokers, and educate them on how these savings pay for energy efficiency (EE) and renewables. Support the inclusion of these factors when financial agents are considering financial eligibility for mortgages.

Ratepayer Benefits:³

This Agreement will result in the following ratepayer benefits:

- Greater Electricity Reliability. This project will provide new data, analysis, and designs for cost effective ZNE residential communities, which will improve reliability with the integration of energy efficiency, demand control, and renewable power with buildings and the smart grid.
- Lower Costs. Significant savings in money, resources, operation and maintenance, energy, and greenhouse gases are available. Both ratepayers and customers benefit from implementing ZNE residential communities.

Technological Advancement and Breakthroughs:⁴

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 providing new methodologies for integrating occupant and technology needs into cost-effective and scalable ZNE strategies, ZNE demonstration data, and ZNE residential guidelines. This project will analyze and define the savings and market barriers to residential communities and provide new, valuable performance data and models from the demonstrations. The products from this research will be essential to meeting the ZNE goals for residential communities.

Agreement Objectives

This Agreement's objectives are to:

³ 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 EPIC in 2011, defines ratepayer benefits as "greater reliability, lower costs, increased safety, and/or enhanced environmental sustainability" (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).

⁴ 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.

- Evaluate the technical and economic feasibility of attaining ZNE in multiple climate zones. This gives us an opportunity to evaluate multiple ZNE packages and solutions that are both cost effective and scalable;
- Research and analyze new methodologies for integrating occupant (first) and technology needs into cost effective, sustainable ZNE designs for new residential communities;
- Demonstrate ZNE solutions for 75 to 125 single family homes to cover a range of technology pathways, climate zones, demographics and business models;
- Create a new resource for ZNE residential designs and pathways for cost effectively meeting the ZNE goals;
- Evaluate how different demographic segment customers perceive and adopt ZNE and the market barriers for each segment;
- Evaluate harmonization and adoption of ZNE between larger and smaller builders. This will help drive adoption across the building community regardless of builder size;
- Compare the implementation of ZNE through rooftop vs. community scale PV. Using a smaller community reduces the cost of evaluating community scale PV;
- Model, and if possible, implement community PV as a way to meet ZNE at one community. Integrating community scale PV is of high interest on the distribution side, but the question of cost effectiveness for the customer remains;
- Understand different constraints with regards to distribution planning by location and utility;
- Understand the difference in city planning and permitting process for ZNE communities and how to standardize answers to some of the reoccurring questions;
- Train multiple sets of trades in each location to enable spreading or “seeding” of best practices for ZNE building within the local area that will address scalability and overcome market barriers from trade expertise;
- Publish ZNE guidelines for residential communities covering technology pathways, community design and real world data.

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)**. 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:

○ **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 Energy Commission's 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 or CD-ROM.

The following describes the accepted formats for electronic data and documents provided to the Energy Commission 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.
- Documents intended for public distribution will be in PDF file format.
- The Recipient must also provide the native Microsoft file format.
- 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 Layers.
- SQL (Structured Query Language).
- Microsoft SQL Server 2008, Stored Procedures. Recommend 2008 R2.
- Microsoft SQL Reporting Services. Recommend 2008 R2.
- XML (external interfaces).

Any exceptions to the Electronic File Format requirements above must be approved in writing by the CAM. The CAM will consult with the Energy Commission's Information Technology 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 implementing this Agreement.

The Recipient shall:

- Attend a "Kick-off" meeting with the CAM, the Commission Agreement Officer (CAO), and any other Energy Commission 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.

The administrative portion of the meeting will include discussion of the following:

- Terms and conditions of the Agreement;
- 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.

The technical portion of the meeting will include discussion of the following:

- The CAM's expectations for accomplishing tasks described in the Scope of Work;
 - An updated Project Schedule;
 - Technical products (subtask 1.1);
 - Progress reports and invoices (subtask 1.5);
 - Final Report (subtask 1.6);
 - Technical Advisory Committee meetings (subtasks 1.10 and 1.11); and
 - Any other relevant topics.
- Provide an *Updated Project Schedule*, *List of Match Funds*, and *List of Permits*, as needed to reflect any changes in the documents.

The CAM shall:

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

Recipient Products:

- Updated Project Schedule (*if applicable*)
- Updated List of Match Funds (*if applicable*)
- Updated List of Permits (*if applicable*)

CAM Product:

- Kick-off Meeting Agenda

Subtask 1.3 Critical Project Review (CPR) Meetings

The goal of this subtask is to determine if the project should continue to receive Energy Commission 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 Energy Commission 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 Energy Commission.

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 Energy Commission, 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 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.
- Submit the CPR Report along with any other *Task Products* that correspond to the technical task for which the CPR meeting is required (i.e., if a CPR meeting is required for Task 2, submit the Task 2 products along with the CPR Report).
- 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* and 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)
- Task Products (draft and/or final as specified in the task)

CAM Products:

- CPR Agenda
- List of Expected CPR Participants
- Schedule for Providing a Progress Determination
- Progress Determination

Subtask 1.4 Final Meeting

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

The Recipient shall:

- Meet with Energy Commission 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.

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.

- 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.
- The administrative portion of the meeting will involve a discussion with the CAM and the CAO of the following Agreement closeout items:
 - Disposition of any state-owned equipment.
 - Need to file a Uniform Commercial Code Financing Statement (Form UCC-1) regarding the Energy Commission's interest in patented technology.
 - The Energy Commission's request for specific "generated" data (not already provided in Agreement products).
 - Need to document the Recipient's disclosure of "subject inventions" developed under the Agreement.
 - "Surviving" Agreement provisions such as repayment provisions and confidential products.
 - Final invoicing and release of retention.

- Prepare a *Final Meeting Agreement Summary* that documents any agreement made between the Recipient and Commission staff during the meeting.
- Prepare a *Schedule for Completing Agreement Closeout Activities*.
- Provide *All Draft and Final Written Products* on a CD-ROM or USB memory stick, organized by the tasks in the Agreement.

Products:

- Final Meeting Agreement Summary (*if applicable*)
- Schedule for Completing Agreement Closeout Activities
- All Draft and Final Written Products

REPORTS AND INVOICES

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.

The Recipient shall:

- Submit a monthly *Progress Report* to the CAM. Each progress report must:
 - 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 Fund and in-state expenditures.

Products:

- Progress Reports
- Invoices

Subtask 1.6 Final Report

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. The CAM will review the Final Report, which will be due at least **two months** before the Agreement end date. When creating the Final Report Outline and the Final Report, the Recipient must use the Style Manual provided by the CAM.

Subtask 1.6.1 Final Report Outline

The Recipient shall:

- Prepare a *Final Report Outline* in accordance with the *Style Manual* provided by the CAM. (*See Task 1.1 for requirements for draft and final products.*)

Recipient Products:

- Final Report Outline (draft and final)

CAM Product:

- Style Manual
- Comments on Draft Final Report Outline
- Acceptance of Final Report Outline

Subtask 1.6.2 Final Report

The Recipient shall:

- Prepare a Final Report for this Agreement in accordance with the approved Final Report Outline, Style Manual, and Final Report Template provided by the CAM with the following considerations:
 - Ensure that the report includes the following items, in the following order:
 - Cover page (**required**)
 - Credits page on the reverse side of cover with legal disclaimer (required)
 - Acknowledgements page (optional)
 - Preface (required)
 - Abstract, keywords, and citation page (required)
 - Table of Contents (required, followed by List of Figures and List of Tables, if needed)
 - Executive summary (required)
 - Body of the report (required)
 - References (if applicable)
 - 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)
 - Ensure that the document is written in the third person.
 - Ensure that the Executive Summary is understandable to the lay public.
 - Briefly summarize the completed work. Succinctly describe the project results and whether or not the project goals were accomplished.
 - Identify which specific ratepayers can benefit from the project results and how they can achieve the benefits.
 - If it's necessary to use a technical term in the Executive Summary, provide a brief definition or explanation when the technical term is first used.
 - Follow the Style Guide format requirements for headings, figures/tables, citations, and acronyms/abbreviations.
 - Ensure that the document omits subjective comments and opinions. However, recommendations in the conclusion of the report are allowed.
 - Include a brief description of the project results in the Abstract.
- 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
- Consider incorporating all CAM comments into the Final Report. 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 Final Report 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.
- Submit one bound copy of the *Final Report* to the CAM along with *Written Responses to Comments on the Draft Final Report*.

Products:

- Final Report (draft and final)
- Written Responses to Comments on the Draft 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 Energy Commission 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 Energy Commission awarding this Agreement and none have been identified at the time this Agreement starts, and then state this in the letter.

If match funds were a part of the proposal that led to the Energy Commission 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, 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.
 - A copy of 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.

- 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*.
- Send the CAM a *Copy of Each Approved Permit*.
- 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.

Products:

- Permit Status Letter
- Updated List of Permits *(if applicable)*
- Updated Schedule for Acquiring Permits *(if applicable)*
- Copy of Each Approved Permit *(if applicable)*

Subtask 1.9 Subcontracts

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.

The Recipient shall:

- Manage and coordinate subcontractor activities in accordance with the requirements of this Agreement.
- Incorporate this Agreement by reference into each subcontract.
- 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.
- If required by the CAM, submit a draft of each Subcontract required to conduct the work under this Agreement.
- Submit a final copy of the executed subcontract.
- 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).

Products:

- Subcontracts (draft if required by the CAM)

TECHNICAL ADVISORY COMMITTEE**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:

- Provide guidance in project direction. The guidance may include scope and methodologies, timing, and coordination with other projects. The guidance may be based on:
 - Technical area expertise;
 - 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.

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:

- 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

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.

The Recipient shall:

- Discuss the TAC meeting schedule with the CAM at the Kick-off meeting. Determine the 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 recruiting. Revise the schedule after the first TAC meeting to incorporate meeting comments.
- Prepare a *TAC Meeting Agenda* and *TAC Meeting Back-up Materials* for each TAC meeting.
- Organize and lead TAC meetings in accordance with the TAC Meeting Schedule. Changes to the schedule must be pre-approved in writing by the CAM.
- Prepare *TAC Meeting Summaries* that include any recommended resolutions of major TAC issues.

Products:

- TAC Meeting Schedule (draft and final)
- TAC Meeting Agendas (draft and final)
- TAC Meeting Back-up Materials
- TAC Meeting Summaries

IV. TECHNICAL TASKS

TASK 2: DESIGN OF ZERO NET ENERGY COMMUNITIES

The goals of this task are to begin the initial design phase of the communities and carry them all the way through technology selection, and permitting. The communities shall be as approved by the CAM. Technology packages for the homes will be selected based on current builder practices and the team's experience with developing technology packages customized to the communities' climate zones. The technology packages for the homes will be optimized based on cost effectiveness. Once the community design, electrical infrastructure, and home elevations and features are complete, permits will be sought and obtained.

Subtask 2.1: Development of Technology Packages

The recipient shall:

- Develop EnergyPlus building energy models aligned with California Building Energy Code Compliance (CBECC) software for the planned home designs for each community and provide an *EnergyPlus Building Energy Model Report* that describes changes to the model and how it is aligned with CBECC software.
- Evaluate performance of the current home designs in the 3 demonstration communities that are at or exceed 2016 California Code of Regulations Title 24 Buildings Standards Code and provide a *Report on Title 24 Compliance*. These homes will provide the reference from which control/baseline data will be derived.
- Evaluate technologies for all planned end uses and develop cost optimal technology packages that will enable attainment of ZNE in different climates which shall exceed applicable 2016 California Code of Regulations Title 24 and Title 20 Standards. Develop cost estimates for the various technology packages using past experience with ZNE communities including expected cost of all installation labor. Develop a *Report on Technology Packages and Cost Estimates* with summary sheet description of various ZNE packages and results of EnergyPlus modeling, compared to both California Code of Regulations Title 24 Buildings Standards Code for built construction, and builder standard practice as determined in this subtask (second bullet of this subtask, above; might be better than Title 24) for various technology packages.
- Compare size of PV systems for each package, and incorporate cost of PV into the *Report on Technology Packages and Cost Estimates*.
- Evaluate both electric and gas options for heating as well as other end uses, looking at overall cost effectiveness, and expected greenhouse gas emissions. Develop *Report on Electric vs. Natural Gas Homes*, comparing them based on TDV energy use, greenhouse gas emissions, and PV sizing for each set of options.
- Evaluate expected cost of operation for different existing and future (experimental) tariffs with ZNE homes. Publish *Worksheets on Expected Cost of Operation of Various ZNE Packages* with various possible tariff structures (Time of Use, inverted tier, demand based, etc.).

Products:

- EnergyPlus Building Energy Models Report
- Report on Title 24 Compliance
- Report on Technology Packages and Cost Estimates
- Report on Electric vs. Natural Gas Homes
- Worksheets on Expected Cost of Operation of Various ZNE Packages

Subtask 2.2: Design of ZNE Community

The recipient shall:

- Identify community parameters, laying out the process for developing a community and the choices made at various stages of development. Develop a *Report on Process for ZNE Community Development* from land acquisition to home operation, including choices to be made at each stage of design.
- Work with builders and other stakeholders such as architects and city planners to develop optimized layouts for PV design of the three communities. Develop a *Report on Community Design* that discusses optimization of PV orientation and its impact on ZNE cost effectiveness.
- Work with electric utility for each community to develop distribution system layout, utilizing the technology packages and the expected load shapes. Run multiple scenarios with and without smart inverters, storage and controllable loads, and using standard as well as active distribution system design. Develop a *Report on Distribution Planning*, including process, evaluation tools used and comparison of beginning and end distribution design for ZNE community.
- Work with electric, gas and water utilities for each community to estimate infrastructure cost for various scenarios as mentioned above. Develop a *Report on Electric vs. Gas Infrastructure Costs and Tradeoffs for ZNE Communities*.
- Evaluate cost effectiveness and design of community scale PV working with PV partners at each community. Develop a *Report on Community Solar Feasibility and Business Models* that includes possible designs and barriers to adoption including customer acceptance and benefits and potential for incorporation in each of the demonstration sites

Products:

- Report on Process for ZNE Community Development
- Report on Community Design
- Report on Distribution Planning
- Report on Electric vs. Gas Infrastructure Costs and Tradeoffs for ZNE Communities
- Report on Community Solar Feasibility and Business Models

Subtask 2.3: Interconnections

For each community, the recipient shall:

- Allocate responsibilities for processing permits and interconnections between builders and product providers. Develop a *Report on Required Permits and Responsibilities*.
- Develop and/or update drawing packages for ZNE *homes* which includes drawings of the energy efficiency packages inside of the homes and report results in a *Drawing Packages for ZNE Report*
- Provide a *Copy of Final Permits* to the CAM.
- Apply for utility interconnection for PV, storage and any other items as required. Provide *Confirmation of Utility Interconnection for PV and Storage*.
- Track and provide quarterly *Construction Schedule Updates*.
- Prepare *CPR Report #1* and participate in a CPR meeting per Subtask 1.3.

Products:

- Report on Required Permits and Responsibilities
- Drawing Packages for ZNE Report
- Copy of Final Permits
- Confirmation of Utility Interconnection for PV and Storage
- Construction Schedule Updates
- CPR Report #1

Subtask 2.4: Monitoring and Evaluation Plans

For each community, the recipient shall:

- Develop monitoring packages that includes a minimum of 12 months measurement and verification, data from the meters, data from individual load circuits, and data from devices to understand customer operation of ZNE homes, along with monitoring for indoor air quality and customer behavior (using device data). Develop *Monitoring Package Report* that includes hardware, data management and indoor air quality and methodology for data analysis.
- Develop legal frameworks for obtaining customer data including data on preferences and behavior and include in a *Legal Framework and Legal Agreements Report*.
- Draft *Independent 3rd Party M&V Plans* incorporating plans from independent third-party M&V partner with control groups and include a monitoring plan for each community demonstration site.

Products:

- Monitoring Package Report
- Legal Framework and Legal Agreements Report
- Independent 3rd Party M&V Plans

TASK 3: CONSTRUCTION OF ZNE COMMUNITIES

The goal of this task is to encompass the development of the ZNE model homes, selling and construction of the ZNE homes, installation of monitoring packages, commissioning of the ZNE homes and finally customer engagement and understanding buying decisions for ZNE homes. This task will extend for a couple of years, while keeping track of sales and related customer feedback. Under this agreement recipient shall construct 75 to 125 single family ZNE homes.

Subtask 3.1: Construct Homes and Provide Customer Education

The recipient shall:

- Monitor purchase of ZNE homes and provide *Quarterly Purchase Updates*.
- Monitor construction practices to ensure compliance with energy models and selected technology packages. Provide updates to Energy Commission in regular monthly or quarterly Progress Reports.
- Test completed homes for performance such as air leakage, duct leakage, and other measurable functions and discuss results in a *Final Commissioning Report*.
- Create a curriculum on the features and operations of ZNE homes. Conduct homeowner education classes with power point presentations on the features and operation and understand any of their concerns through feedback from surveys.
 - Develop a *Report on Homeowner Education*
 - Develop a *PowerPoint Presentation on Curriculum*

- Develop a *Collected Customer Education Feedback Report*
- Work with mortgage companies as part of the sales process and understand how ZNE pathways and PV procurement strategies impact a homeowner's ability to purchase their house. Develop a *Report on Financial Affordability of ZNE Homes*.

Products:

- Quarterly Purchase Updates
- Final Commissioning Report
- Report on Homeowner Education
- PowerPoint Presentations on Curriculum
- Collected Customer Education Feedback Report
- Report on Financial Affordability of ZNE Homes

Subtask 3.2: Customer Engagement – Model Homes and Customer Feedback

The recipient shall:

- Develop model home design working with builder partners to educate both prospective homeowners and the general public and develop a *Report on the Model Home Technology Package* for sales staff and customer education on ZNE.
- Work with builder partners to utilize model homes as learning centers for builder staff to understand the definition of ZNE (TDV-ZNE), how ZNE status is determined, and different approaches to labeling and marketing ZNE homes to potential buyers.
- Conduct surveys and obtain feedback from visitors to the model homes. Develop a *Report on Customer Perception of ZNE* covering prospective homeowners' initial perception of ZNE, as well as staff approaches to manage potential buyers' expectations and/or concerns regarding purchase of a ZNE home and builders and buyers' approaches to the ZNE purchase decision based on customer surveys.
- Interview builder staff involved in setting up and or selling solar financing and/or selling of rooftop solar systems. Develop a *Report on Homebuyer Preference for Solar Lease vs. Purchase*.
- Train sales staff on ZNE and work closely with them to message customers based on results of customer surveys. Develop a *Report on Sales Training*. The report will describe the structures of the training sessions and the educational material used to train sales staff. It will also collate questions and other information requested by sales staff as well as their feedback based on prospective homeowner interaction.
- Develop MOU (memorandum of understanding) for buyers (both ZNE and non-ZNE/control homes for each community) to allow use of data from surveys, discussions, utility bills and home energy monitoring. Solicit buyers to agree to participate in this study, under the terms of the MOU.
- Conduct surveys of buyers at different stages of the construction and occupancy process. Develop a *Summary of Buyer Survey Results*.
- Prepare *CPR Report #2* and participate in a CPR meeting per Subtask 1.3.

Products:

- Report on the Model Home Technology Package
- Report on Customer Perception of ZNE
- Report on Homebuyer Preference for Solar Lease vs. Purchase
- Report on Sales Training
- Summary of Buyer Survey Results
- CPR Report # 2

Subtask 3.3: Install Monitoring and Controls Infrastructure

The recipient shall:

- Develop controls schema and algorithms for grid integration using end use systems and the impacts from ZNE features being installed in these homes. Develop a *Report for the Control Schema* for integration of end use systems with grid needs and impacts from ZNE.
- Develop and prepare a *Report on Monitoring and Data Analytics Infrastructure* to include, but not be limited to, the development of data analytics infrastructure including monitored data points.
- Install and integrate controls and monitoring systems hardware into ZNE homes. Develop a *Report on Controls Operation, Troubleshooting and Customer Integration* that describes system control integration issues and resolutions.
- Commission controls and monitoring equipment. Develop a *Report on Systems Controls and Management of DER* that explains how systems controls manage any impacts at the distribution grid. Report to include systems controls management of DER, management of any impacts at the distribution grid and their response to bulk system requirements such as utility demand response programs and California ISO (Independent System Operator) programs.

Products:

- Report for the Control Schema
- Report on Monitoring and Data Analytics Infrastructure.
- Report on Controls Operation, Troubleshooting and Customer Integration
- Report on Systems Controls and Management of DER.

TASK 4: CUSTOMER EDUCATION, OCCUPANT ACCEPTANCE, AND M&V

The goal of this task is to wrap up the analysis and reporting portion of the project. After the homes are sold and the monitoring systems are installed, the monitoring systems shall be commissioned and the data infrastructure built to receive very large quantities of data. This data will be used to conduct cost effectiveness evaluations of individual measures, technology packages and whole home operation. This task will also measure greenhouse gas impacts from the communities. It will also measure occupant preferences and provide guidance for how to scale ZNE communities.

Subtask 4.1. M&V Operation

The Recipient shall:

- Test monitoring systems and ensure that data is being received and stored appropriately. Develop a *Report on Commissioning of Monitoring Systems and Data Analysis and Storage Infrastructure* to discuss results of testing and commissioning.
- Develop a *Report on Data Analysis Techniques to Manage Large Data Sets* that discusses data analysis techniques that are specific to this type of project.
- Collect data on home energy use from both utility bills and monitored whole home data (and possibly circuit level data), based on the terms of the MOU from each homeowner.
- Develop a *Report on the Techniques to Analyze Customer Preferences for Indoor Comfort and Occupant Engagement* that discusses how to assess a user's indoor comfort preference level.

- Evaluate operation of plug loads and if possible, use techniques such as Non-Intrusive load monitoring to pinpoint plug load usage. Develop a *Report on Detailed Plug Load Data and Appliance Usage that discusses results of plug load energy usage of appliances isolating impacts from occupant operation and appliance efficiency.*
- Conduct detailed resident surveys of plug load usage and correlate to observed data from Report on Detailed Plug Load Data and Appliance Usage, described above. Develop a *Report on the Detailed Resident Surveys of Plug Load Usage* to discuss monitoring results and evaluation of observed data.
- Measure indoor air quality in homes with and without Smart Ventilation. Develop a *Report on the Tradeoff of Indoor Air Quality and Energy Use in ZNE Homes*, to include but not be limited to, a discussion of how smart ventilation systems impact both in comparison to base ventilation.

Products:

- Report on Commissioning of Monitoring Systems and Data Analysis and Storage Infrastructure
- Report on Data Analysis Techniques to Manage Large Data Sets
- Report on the Techniques to Analyze Customer Preferences for Indoor Comfort and Occupant Engagement
- Report on Detailed Plug Load Data and Appliance Usage
- Report on the Detailed Resident Surveys of Plug Load Usage
- Report on the Tradeoff of IAQ and Energy Use in ZNE Homes

Subtask 4.2 Analysis of Cost Effectiveness of ZNE

The recipient shall:

- Evaluate and develop a *Report on the Cost Effectiveness of Selected Technology Packages and Individual Energy Efficiency Measures* using measured data on the installed technologies (i.e., Subtask 2.1).
- Develop methodology for greenhouse gas (GHG) emissions calculation using CAM approved tools such as ones using marginal emissions rates or the E3 calculator. Evaluate and enumerate GHG emissions and report results in a *Report on the Reduction in GHG Emissions with ZNE Homes and Communities.*
- Evaluate baseline/control homes using EnergyPlus building energy model data from Subtask 2.1 and monitored data from Subtasks 2.1 and 4.1 for both energy use and GHG emissions. Develop a *Report on Measured Savings* using control-treatment evaluation and in comparison to predictions from energy models.

Products:

- Report on the Cost Effectiveness of Selected Technology Packages and Individual Energy Efficiency Measures
- Report on the Reduction in GHG Emissions with ZNE Homes and Communities
- Report on Measured Savings

Subtask 4.3 Independent Third Party Measurement and Verification

The recipient shall:

- Provide a minimum of 12 months of M&V data to the third party M&V partner and assist as required. M&V partner shall submit an *M&V Plan*. The Evaluation Report will discuss

the detailed independent M&V per the CAM approved Independent 3rd Party M&V Plans. The Independent 3rd Party M&V Plans and Report should explain how they relate to subtask 2.4.

- Reconcile the difference in energy savings findings between the detailed monitoring and the third party M&V results. Develop a *Report on Impact Analysis and Data Reconciliation*.
- Prepare CPR Report #3 and participate in a CPR meeting per Subtask 1.3.

Products:

- M&V Plan
- Evaluation Report
- Report on Impact Analysis and Data Reconciliation
- CPR Report # 3

Subtask 4.4 Customer Engagement and Feedback

The recipient shall:

- Conduct customer surveys that provide insight into customer satisfaction and any behavioral modification with ZNE homes. Conduct surveys of customers on their expectations with regard to energy bills, comfort and convenience from these homes. Prepare a *Report on Customer Satisfaction with Included Survey Instruments* to discuss survey results.
- Prepare *Customer Education Presentation Materials* and use them to conduct educational presentations that describe how customer behavior might impact energy use. Include high quality photographs as described in Task 6.

Products:

- Report on Customer Satisfaction with Included Survey Instruments
- Customer Education Presentation Materials

TASK 5: EVALUATION OF PROJECT BENEFITS

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

The Recipient shall:

- Complete three Project Benefits Questionnaires that correspond to three main intervals in the Agreement: (1) *Kick-off Meeting Benefits Questionnaire*; (2) *Mid-term Benefits Questionnaire*; and (3) *Final Meeting Benefits Questionnaire*.
- Provide all key assumptions used to estimate projected benefits, including targeted market sector (e.g., population and geographic location), projected market penetration, baseline and projected energy use and cost, operating conditions, and emission reduction calculations. Examples of information that may be requested in the questionnaires include:
 - For Product Development Projects and Project Demonstrations:
 - Published documents, including date, title, and periodical name.
 - Estimated or actual energy and cost savings, and estimated statewide energy savings once market potential has been realized. Identify all assumptions used in the estimates.
 - Greenhouse gas and criteria emissions reductions.

- Other non-energy benefits such as reliability, public safety, lower operational cost, environmental improvement, indoor environmental quality, and societal benefits.
- Data on potential job creation, market potential, economic development, and increased state revenue as a result of the project.
- A discussion of project product downloads from websites, and publications in technical journals.
- A comparison of project expectations and performance. Discuss whether the goals and objectives of the Agreement have been met and what improvements are needed, if any.
- Additional Information for Product Development Projects:
 - Outcome of product development efforts, such copyrights and license agreements.
 - Units sold or projected to be sold in California and outside of California.
 - Total annual sales or projected annual sales (in dollars) of products developed under the Agreement.
 - Investment dollars/follow-on private funding as a result of Energy Commission funding.
 - Patent numbers and applications, along with dates and brief descriptions.
- Additional Information for Product Demonstrations:
 - Outcome of demonstrations and status of technology.
 - Number of similar installations.
 - Jobs created/retained as a result of the Agreement.
- For Information/Tools and Other Research Studies:
 - Outcome of project.
 - Published documents, including date, title, and periodical name.
 - A discussion of policy development. State if the project has been cited in government policy publications or technical journals, or has been used to inform regulatory bodies.
 - The number of website downloads.
 - An estimate of how the project information has affected energy use and cost, or has resulted in other non-energy benefits.
 - An estimate of energy and non-energy benefits.
 - Data on potential job creation, market potential, economic development, and increased state revenue as a result of project.
 - A discussion of project product downloads from websites, and publications in technical journals.
 - A comparison of project expectations and performance. Discuss whether the goals and objectives of the Agreement have been met and what improvements are needed, if any.
- Respond to CAM questions regarding responses to the questionnaires.

The Energy Commission may send the Recipient similar questionnaires after the Agreement term ends. Responses to these questionnaires will be voluntary.

Products:

- Kick-off Meeting Benefits Questionnaire
- Mid-term Benefits Questionnaire

- Final Meeting Benefits Questionnaire

TASK 6: TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES

The goal of this task is to develop a plan to make the knowledge gained, experimental results, and lessons learned available to the public and key decision makers.

The Recipient shall:

- Prepare an Initial Fact Sheet at start of the project that describes the project. Use the format provided by the CAM.
- Prepare a Final Project Fact Sheet at the project's conclusion that discusses results. Use the format provided by the CAM.
- Prepare a Technology/Knowledge Transfer Plan that includes:
 - An explanation of how the knowledge gained from the project will be made available to the public, including the targeted market sector and potential outreach to end users, utilities, regulatory agencies, and others.
 - A description of the intended use(s) for and users of the project results.
 - Published documents, including date, title, and periodical name.
 - Copies of documents, fact sheets, journal articles, press releases, and other documents prepared for public dissemination. These documents must include the Legal Notice required in the terms and conditions. Indicate where and when the documents were disseminated.
 - A discussion of policy development. State if project has been or will be cited in government policy publications, or used to inform regulatory bodies.
 - The number of website downloads or public requests for project results.
 - Additional areas as determined by the CAM.
- Conduct technology transfer activities in accordance with the Technology/Knowledge Transfer Plan. These activities will be reported in the Progress Reports.
- When directed by the CAM, develop Presentation Materials for an Energy Commission- sponsored conference/workshop on the results of the project.
- Provide at least six High-Quality Digital Photographs (minimum resolution of 1300x500 pixels in landscape ratio) of pre- and post-technology installation at the project sites or related project photographs.
- Prepare a Technology/Knowledge Transfer Report on technology transfer activities conducted during the project.

Products:

- Initial Fact Sheet (draft and final)
- Final Project Fact Sheet (draft and final)
- Presentation Materials (draft and final)
- High-Quality Digital Photographs
- Technology/Knowledge Transfer Plan (draft and final)
- Technology/Knowledge Transfer Report (draft and final)

V. Project schedule

Please see the attached Excel spreadsheet.

STATE OF CALIFORNIA

STATE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION

RESOLUTION - RE: Electric Power Research Institute, Inc. (EPRI) Project

WHEREAS, proposed Agreement Number EPC-15-094, “Demonstration of Affordable, Comfortable, Grid Integrated Zero Net Energy Communities” (hereinafter also known as “Project”), with Electric Power Research Institute, Inc. involves three (3) separate Project sites in the Cities of Lake Forest, Clovis, and Woodland.

WHEREAS, as to the Project site in the City of Lake Forest (Encanto Residential Project):

1. The City of Lake Forest is the Lead Agency for the Encanto Residential Project, which is one of three Project sites for Agreement Number EPC-15-094;
2. An Initial Study was prepared to determine if the Encanto Residential Project could have a significant effect on the environment and thereafter a Mitigated Negative Declaration was prepared;
3. The City of Lake Forest adopted the Mitigated Negative Declaration as modified and approved a Mitigation Monitoring, and Reporting Program as modified, by resolution, copies of which are on file with the Energy Commission; and
4. The City of Lake Forest reviewed and considered the Initial Study, Mitigated Negative Declaration, and the Mitigation Monitoring, and Reporting Program prepared for the Encanto Residential Project, adopted findings required by the California Environmental Quality Act, and approved the Encanto Residential Project tentative tract map by Resolution, a of which is on file with the California Energy Commission.

WHEREAS, as to the Project site in the City of Clovis (Sierra Crest):

1. The City of Clovis is the Lead Agency for Sierra Crest Single Family Residential Project (hereinafter, “Sierra Crest”), which is the second of three Project sites for Agreement Number EPC-15-094;
2. In approving Sierra Crest, the City of Clovis relied on its prior environmental review of the Clovis General Plan and Development Code Update which includes Sierra Crest;
3. The City of Clovis prepared a Final Environmental Impact Report for the Clovis General Plan and Development Code Update to assess the potentially significant environmental impacts of the General Plan and Development Code Update, a copy of which is on file with the California Energy Commission;
4. The City of Clovis by resolution, a copy of which is on file with the California Energy Commission, certified the Final Environmental Impact Report and adopted CEQA findings of fact, a statement of overriding considerations, and a Mitigation Monitoring Program; and

5. The City of Clovis reviewed and considered the Final Environmental Impact Report prepared for Sierra Crest, its findings of fact and statement of overriding considerations, and the Mitigation Monitoring Program in approving the Sierra Crest tentative tract map by Resolution, a copy of which is on file with the California Energy Commission.

WHEREAS, as to the Project site in the City of Woodland (Spring Lake):

1. The City of Woodland is the Lead Agency for the Spring Lake Specific Plan (formerly known as the Turn of the Century Specific Plan), which includes the Spring Lake Heritage Remainder Area Development (hereinafter, "Spring Lake"), which is the third of three Project sites for Agreement Number EPC-15-094;
2. The City of Woodland prepared a Final Environmental Impact Report to assess the potentially significant environmental impacts of Spring Lake, a copy of which is on file with the Energy Commission;
3. The City of Woodland certified the Final Environmental Impact Report by Resolution, a copy of which is on file with the Energy Commission;
4. The City of Woodland reviewed and considered the Final Environmental Impact Report, made findings of fact, issued a statement of overriding considerations, adopted a CEQA addendum, adopted a Mitigation Monitoring Plan, and approved the Spring Lake Specific Plan by resolution, a copy of which is on file with the California Energy Commission; and
5. The City of Woodland adopted several amendments to the Spring Lake Final Environmental Impact Report amended the Spring Lake Specific Plan and subdivision map, as detailed in a Resolution, a copy of which is on file with the California Energy Commission.

WHEREAS, the Energy Commission is considering proposed Agreement EPC-15-094, a grant to fund the "Demonstration of Affordable, Comfortable, Grid Integrated Zero Net Energy Communities" Project for the three sites listed above; and

Prior to acting on the Agreement EPC-15-094, the Energy Commission desires to make certain findings pursuant to the CEQA Guidelines, title 14, section 15096;

NOW THEREFORE, BE IT RESOLVED:

1. As to the Project site in the City of Lake Forest (Encanto Residential Project):
 - a. The Energy Commission has reviewed the information contained in the Initial Study, Mitigated Negative Declaration, Mitigation, and Monitoring, and Reporting Program, as well as the CEQA findings contained in the Lead Agency's corresponding resolution that are relevant to its approval of EPC-15-094, which are adopted to the extent that they are relevant to the Energy Commission's decision to approve EPC-15-094.
 - b. The City of Lake Forest has already adopted the mitigation measures recommended in the aforementioned documents, has authority to implement the mitigation measures or to seek any required approvals for the mitigation measures, and the Energy Commission has no direct authority to implement the mitigation measures.
 - c. The Energy Commission has reviewed and considered the Initial Study, Mitigated Negative Declaration, and Mitigation, Monitoring, and Reporting

Program and finds that they are adequate for its use as the decision-making body for its consideration of EPC-15-094.

- d. Approval of EPC-15-094 is within the scope of Encanto Residential Project, and activities evaluated in the Mitigated Negative Declaration.
 - e. Since the Mitigated Negative Declaration was finalized, there have been no substantial project changes and no substantial changes in the project circumstances that would require major revisions to it due to the involvement of new significant environmental effects or an increase in the severity of previously identified significant impacts, and there is no new information of substantial importance that would change the conclusion set forth therein.
 - f. The Energy Commission has not identified any feasible alternative or additional feasible mitigation measures within its power that would substantially lessen or avoid any significant effect Encanto Residential Project would have on the environment.
2. As to the Project site in the City of Clovis (Sierra Crest):
- a. The Energy Commission has reviewed the information contained in the Final Environmental Impact Report, the statement of overriding considerations, and the Mitigation Monitoring Program, as well as the CEQA findings contained in the Lead Agency's corresponding resolution that are relevant to its approval of EPC-15-094, which are adopted to the extent that they are relevant to the Energy Commission's decision to approve EPC-15-094.
 - b. The City of Clovis has already adopted the mitigation measures recommended in the aforementioned documents, has authority to implement the mitigation measures or to seek any required approvals for the mitigation measures, and the Energy Commission has no direct authority to implement the mitigation measures.
 - c. The Energy Commission has reviewed and considered the Final Environmental Impact Report for the Clovis General Plan and Development Code Update, the statement of overriding considerations, and the Mitigation Monitoring Program and finds that they are adequate for its use as the decision-making body for its consideration of EPC-15-094.
 - d. Approval of EPC-15-094 is within the scope of Sierra Crest, and activities evaluated in the Final Environmental Impact Report and statement of overriding considerations.
 - e. Since the Final Environmental Impact Report and statement of overriding considerations were finalized there have been no substantial project changes and no substantial changes in the project circumstances that would require major revisions to it due to the involvement of new significant environmental effects or an increase in the severity of previously identified significant impacts, and there is no new information of substantial importance that would change the conclusion set forth therein.
 - f. The Energy Commission has not identified any feasible alternative or additional feasible mitigation measures within its power that would substantially lessen or avoid any significant effect Sierra Crest would have on the environment.
3. As to the Project site in the City of Woodland (Spring Lake):

- a. The Energy Commission has reviewed the information contained in the Final Environmental Impact Report (and amendments thereto), the statement of overriding considerations, and the Mitigation Monitoring Plan, as well as the CEQA findings contained in the Lead Agency's corresponding resolution that are relevant to its approval of EPC-15-094, which are adopted to the extent that they are relevant to the Energy Commission's decision to approve EPC-15-094.
- b. The City of Woodland has already adopted the mitigation measures recommended in the aforementioned documents, has authority to implement the mitigation measures or to seek any required approvals for the mitigation measures, and the Energy Commission has no direct authority to implement the mitigation measures.
- c. The Energy Commission has reviewed and considered the Final Environmental Impact Report (and amendments thereto), the statement of overriding considerations, and the Mitigation Monitoring Plan and finds that they are adequate for its use as the decision-making body for its consideration of EPC-15-094.
- d. Approval of EPC-15-094 is within the scope of Spring Lake, and activities evaluated in the Final Environmental Impact Report (and amendments thereto) and statement of overriding considerations.
- e. Since the Final Environmental Impact Report (and amendments thereto) and statement of overriding considerations were finalized there have been no substantial project changes and no substantial changes in the project circumstances that would require major revisions to it due to the involvement of new significant environmental effects or an increase in the severity of previously identified significant impacts, and there is no new information of substantial importance that would change the conclusion set forth therein.
- f. The Energy Commission has not identified any feasible alternative or additional feasible mitigation measures within its power that would substantially lessen or avoid any significant effect Spring Lake would have on the environment.

BE IT FURTHER RESOLVED, the Energy Commission finds, based on the information contained in the environmental review documents for the Encanto Residential Project, Sierra Crest and Spring Lake Project sites described above, including findings of fact and statements of overriding considerations, that the mitigation measures incorporated therein will prevent EPC-15-094 from having any significant environmental impacts, or on balance, there are economic, legal, social, technological or other benefits, including environmental benefits, associated with the Project that serve to outweigh the Project's significant unavoidable effects.

BE IT FURTHER RESOLVED, that the Energy Commission approves Agreement EPC-15-0494 with Electric Power Research Institute, Inc. (EPRI) for \$4,942,809; and

BE IT FURTHER RESOLVED, that this document authorizes the Executive Director or his or her designee to execute the same on behalf of the Energy Commission.

BE IT FURTHER RESOLVED, that this document authorizes the Executive Director or his or her designee to prepare and file a Notice of Determination on behalf of the Energy Commission.

CERTIFICATION

The undersigned Secretariat to the Commission 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 California Energy Commission held on June 14, 2016.

AYE: [*List Commissioners*]

NAY: [*List Commissioners*]

ABSENT: [*List Commissioners*]

ABSTAIN: [*List Commissioners*]

*Cody Goldthrite,
Secretariat*