California Energy Commission

STAFF FINAL REPORT

THE ELECTRIC PROGRAM INVESTMENT CHARGE: PROPOSED 2012-14 TRIENNIAL INVESTMENT PLAN

Appendices A–E

CALIFORNIA
ENERGY COMMISSION

Edmund G. Brown, Jr., Governor

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APPENDIX A:
Summary of Stakeholder Comments and Energy Commission Staff Responses on the August 2-3 and August 9-10 Workshops

The Energy Commission held public workshops to discuss the draft *Electric Program Investment Charge Proposed 2012-14 Triennial Investment Plan* (draft proposed investment plan) on August 2-3, 2012, in Sacramento, California and on August 9-10, 2012, in Los Angeles, California. Several participants offered verbal public comment during these workshops, and many others submitted written comments to the Energy Commission for consideration. In this appendix, staff summarizes and responds to all comments submitted through September 19, 2012.

This appendix organizes comments by chapter of the proposed investment plan: Applied Research and Development, Technology Demonstration and Deployment, Market Facilitation, New Solar Homes Partnership, Program Administration, and Program Benefits Assessment, with general comments grouped together in a seventh section. Each section includes a summary of comments and Energy Commission staff responses.

The summary includes comments expressing general support of various components of the draft proposed investment plan. These statements of support have informed preparation of the draft proposed investment plan.

As summarized below, many of the written comments indicated an interest in participating in funding opportunities provided by the EPIC program. The Energy Commission plans to begin offering opportunities for funding through EPIC after July 2013. The Energy Commission plans to utilize competitive selection processes for applications for EPIC funding. Projects selected for EPIC funding will need to demonstrate investor-owned utility ratepayer benefits and meet other selection criteria.

Applied Research and Development

The applied research section of the EPIC will address funding gaps needed to help innovative energy technologies and approaches overcome the "Technological Valley of Death". Comments on applied research are discussed below, organized by topic.

Energy Efficiency and Demand Response

Summary of Comments

The participants that submitted comments on energy efficiency provided the following specific recommendations for applied research topics.

Steve Schmidt of High Energy Audits provided comments suggesting that funding be used for examining "opportunities for cost effective negawatts" in plug loads and analyzing remote interval data from smart meters.[1]

In a joint comment letter submitted on behalf of California ReLeaf, California Urban Forests Council, Planning and Conservation League, Trust for Public Land, and the American Planning Association (APA) California Chapter, the participants suggested including energy efficiency and energy conservation techniques such as "urban forests and urban greening".[2]

SCE recommended that the Energy Commission use EPIC funds to conduct an analysis on the cost-effectiveness of different methods to reach zero net energy.[3]

The University of California, Los Angeles (UCLA) suggested that funding go toward establishing energy consumption baselines for major metropolitan areas, and overlaying the baseline maps with socio-demographic, land use, and climate variables to help prioritize geographic areas for funding.[4] Similarly, the Local Government Commission (LGC) requested that EPIC "continue to include funding that examines the relationships between land use, building types, densities, socio-demographic and economic trends, and energy use."[5]

Discussion and Staff Response

Staff considered these comments and has included energy efficiency research in the draft proposed investment plan.

With respect to SCE's request to conduct a cost-effectiveness analysis on methods for reaching zero net energy, staff has incorporated this within the scope of initiative S1.8 Develop Cost-Effective Technologies and Approaches to Achieve California's ZNE Buildings.

Staff acknowledges the comments submitted by California ReLeaf, et al., but notes that such activities are not within the scope of the activities included in this proposed investment plan.

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[1] Steve Schmidt comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Steve_Schmidt-High_Energy_Audits_Comments_TN-66831.pdf

[2] California ReLeaf, et al., comments http://energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/

[3] SCE comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Southern_California_Edisons_Comment_Letter_on_CEC_EPIC_Workshop_TN-66819.pdf

[4] UCLA comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-14_Comment_Letter_from_University_of_California,_Los_Angeles_TN-66698.pdf

[5] LGC comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-01_Local_Government_Commission_Comment_Commissioner_Peterman_TN-66408.pdf

In response to comments submitted by UCLA, funding will be granted via competitive solicitation processes. Many suggestions regarding consideration of land use and building types will be examined in the road mapping exercise (S10.3) to determine the best research efforts in this area.

Clean Generation

Summary of Comments

Southern California Edison (SCE) recommended several applied research topics, including: the placement of peaker or flexible generation units for grid stability; demand response for renewable integration; market analysis and tariff development for customer renewable distributed generation systems that can provide voltage/VAR support for distribution circuits; research to examine using Air Quality Management District's ("AQMD") banked emission credits for new energy generation; and a collaborative effort with the California Independent System Operator (California ISO) to develop "new market products for load following".[6]

Synthetic Genomics requested that EPIC funds be used to invest in the algae industry.[7]

The University of La Verne requested funding for its Water Technology Institute, which will focus on the "study, development, training, and use of water technologies".[8]

PI Energy requested funding for developing new solar technologies.[9]

Alexander P. Lyte's comments suggest use of EPIC funds for researching and developing new models to determine the economic effects of renewable energy technologies.[10]

The Renewable Energy Testing Center (RETC) requested funding for the Center that would allow testing of various emerging clean energy technologies.[11]

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[6] SCE comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Southern_California_Edisons_Comment_Letter_on_CEC_EPIC_Workshop_TN-66819.pdf

[7] Synthetic Genomics comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-13_Synthetic_Genomics_TN-66628.pdf

[8] University of La Verne comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Provost_Gregory_Dewey_of_the_University_of_La_Verne_TN-66785.pdf

[9] PI Energy comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_PI_Energy_Comments_TN-66839.pdf

[10] Alexander P. Lyte's comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Public_Comment_Alexander_P_Lyte_TN-66739.pdf

[11] Renewable Energy Testing Center http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-07_Comment_Letter_from_Renewable_Energy_Testing_Center_TN-66678.pdf

The UC California Institute for Energy and Environment (CIEE) requested that the Energy Commission continue to fund research on carbon capture and sequestration, as previously provided through the Public Interest Energy Research program.[12]

Sustainable Conservation's comments requested that the investment plan emphasize "research that will facilitate greater deployment of biogas digesters."[13]

SolaDyne Capital (SolaDyne) commented in support of using EPIC funds to conduct "[quick service restaurant sector] energy research, and interface with California universities to research this business sector's energy behavior." SolaDyne also suggested "research on Energy use and peak demand in commercial buildings, specifically in the QSR sector and how it can be reduced by implementing various energy information technologies that monitor the current operations and support automated demand reductions."[14]

Susan Opava of the California State Polytechnic University, San Luis Obispo, suggested that research funding leverage the existing Morro Bay Power Plant that will soon be decommissioned.[15]

Discussion and Staff Response

The investment plan must focus research funding on priority areas and keep investment initiatives within the scope of the CPUC EPIC decision.

The majority of the recommendations that SCE offered are within the scope of S6: Develop Smart Grid Technologies, Tools, and Strategies to Integrate Intermittent Renewables and Other Emerging Technologies; S18.5 Conduct Market Analysis of Innovative Strategies to Facilitate Clean Energy Storage, Demand Response, Electric Vehicles, and Renewable Energy; and S2.1 Develop Cost-Effective Metering and Telemetry to Allow Customers with Demand Response, Distributed Generation, Plug in Electric Vehicles and Energy Storage to Participate in California ISO Markets. Staff assumes reference is to Potential Role of Demand Response Resources in Page i of *Integrating Variable Renewable Energy under California's 33 percent Renewables Portfolio Standard*, July 20th, 2012. The proposed investment plan does not include funding for the examination of using AQMD banked emission credits for new energy generation, as staff believes that this falls outside of the scope of EPIC.

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[12] CIEE comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Niall_Mateer_of_UC_California_Institute_for_Energy_and_Environment_TN-66788.pdf

[13] Sustainable Conservation comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Sustainable_Conservation_Comments.pdf

[14] SolaDyne Capital comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Stakeholder_Comments_of_Soladyne_Capital_TN-66856.pdf

[15] Susan Opava comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Susan_Opava-Cal%20Poly_Comments_TN-66840.pdf

Funding to develop new solar technologies will be included under initiatives S 3.3, S4.1, and S4.2.

Algae research is currently focused on the production of transportation fuels. While there are opportunities for co-location with energy generation sites, this activity is outside the scope of EPIC.

Alexander P. Lyte's suggestion for research also falls outside of the scope of EPIC because it appears to be basic research. The CPUC EPIC decision does not allow for funding for basic research activities.

Staff acknowledges comments on consumer behavior in Commercial Buildings. Research is planned under Initiative S1.4 Investigate and Improve Understanding of Consumer Behavior to Increase and Sustain Energy Efficiency Improvements in Buildings. Staff will be collaborating with the CPUC and IOUs as studies on behavior are in process. Research will address additional concerns under S1.2 Develop, Test, Demonstrate, and Integrate Equipment, Systems, and Components That Improve the Energy Efficiency Existing and Advanced Heating, Ventilation, Air Conditioning, and Refrigeration Systems; S1.3 Develop, Test and Demonstrate Advanced Building Envelope Systems, Materials and Components; and S1.6 Cost-effective Retrofit Strategies to Achieve Greater Energy Efficiency in Buildings.

EPIC funding is proposed to be used for matching federal funding of a carbon sequestration demonstration project. Further research on carbon sequestration, including beneficial uses of carbon dioxide, will be investigated for the next triennial investment plan.

Smart Grid Enabling Clean Energy

Summary of Comments

AGIOSAT Government Services recommended that EPIC funds should be used to identify new applications for smart grid technology, including "utility-scale applications like substation automation, distribution automation, advanced metering infrastructure (AMI) backhaul, remote monitoring, workforce mobility, and communications network redundancy."[16]

The California Marine and Intermodal Transportation System Advisory Council (CALMITSAC) recommended funding for reducing soft costs specifically related to the "goods movement" or transportation of goods. CALMITSAC also supports joint research projects, development of best practices guides, and creation of energy innovation clusters.[17]

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[16] AGIOSAT comments http://energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/

[17] CALMITSAC comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_Comment_Letter_from_California_Marine_and_Intermodal_Transportation_System_Advisory_Council_TN-66723.pdf

Southern California Edison (SCE) suggested that research initiatives should leverage existing deployed equipment, like synchrophasors, to utilize technologies in new applications that benefit utility customers.[18]

The California Independent System Operator (California ISO) recommended funding research efforts that would help identify new applications for synchrophasors.[19]

GRIDiant requested funding for research to analyze the potential impacts of renewable integration due to the 33% Renewables Portfolio Standard goal and to examine the pricing methodologies and market structures for distributed energy resources (DER).[20]

Discussion and Staff Response

Staff incorporated communication and automation research for smart grid applications in the proposed investment plan.

CALMITSAC's recommendation of using EPIC funding to help reduce soft costs, specifically related to the "goods movement," appears to be outside of the scope of the CPUC decision.

Strategic Objective S.10 Leverage California's Regional Innovation Clusters to Accelerate the Deployment of Early-Stage Clean Energy Technologies and Companies addresses the use of energy innovation clusters.

The proposed investment plan includes research on synchrophasors, as suggested by the California ISO and SCE. While Energy Commission projects will leverage existing deployed equipment, staff suggests that the IOUs may be best positioned to use technology demonstration and deployment funds to conduct projects related to SCE's recommendation.

With respect to GRIDiant's comments, the proposed investment plan also contains opportunities for research on the potential impacts of integrating renewable energy into the grid.

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[18] SCE comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Southern_California_Edisons_Comment_Letter_on_CEC_EPIC_Workshop_TN-66819.pdf

[19] CAISO comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_California_Independent_System_Operator_Corporation_Comments_TN-66835.pdf

[20] GRIDiant comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-24_GRIDiant_Stakeholder_Comments_re_the_EPIC_Program_TN-66937.pdf

Plug-in electric vehicles

Several participants offered comments relating to the development of plug-in electric vehicles (PEVs). The California Center for Sustainable Energy (CCSE),[21] Coulomb Technologies,[22] GridX,[23] and Grant Management Associates[24] requested that EPIC funds be used for improving the charging infrastructure for plug-in electric vehicles through integration with smart grid technologies. Tom Turrentine, Dahlia Garas, and Tobias Barr of the University of California, Davis (UC Davis)[25] also suggested funding for improving the charging infrastructure for PEVs. They provided an additional suggestion that funds be used to conduct behavioral studies, implement education and outreach efforts, improve grid integration, and reduce costs.

CALSTART requested activities across the EPIC funding categories to support electric vehicles, discussing a specific need for funding to examine battery reuse options, ancillary services, storage, and infrastructure technologies.[26]

Jason Wolfe of A Better Place suggested that EPIC provide grants or incentives to reduce the upfront costs of electric vehicles and to reduce the cost of charging infrastructure.[27]

Discussion and Staff Response

Staff has included research on improving plug-in vehicle charging infrastructure and integration with smart grid. Market support for reducing the cost of electric vehicles and charging infrastructure is not included in the scope of the proposed investment plan, as the CPUC EPIC decision suggested that market support is not an appropriate use of EPIC funds.

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[21] CCSE comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Center_for_Sustainable_Energy_Comments_TN-66850.pdf

[22] CT comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_Stakeholder_Comments_of_Coulomb_Technologies_Inc_TN-66711.pdf

[23] GridX comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_GridX_Inc_TN-66808.pdf

[24] GMA comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-24_Grant_Management_Associates_Comments_re_the_EPIC_Program_TN-66936.pdf

[25] Tom Turrentine comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_UC_Davis_Turrentine_Garas_Barr_Comments_TN-66809.pdf

[26] CALSTART comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comments_of_CALSTART_on_EPIC_Investment_Plan_TN-66734.pdf

[27] Jason Wolfe comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_from_Jason_Wolf_of_a_Better_Place_TN-66814.pdf

Cross-Cutting

Energy Innovation Clusters

Summary of Comments

Several of the California State Universities submitted comments in support of developing a clean energy innovation cluster. The CSU's who submitted comments include: CSU Monterey Bay;[28] CSU on Ocean Affairs and Technology;[29] CSU Stanislaus;[30] Sonoma State University;[31] San Francisco State University;[32] CSU COAST;[33] CSU Long Beach;[34] Moss Landing Marine Parties; [35] Humboldt State University;[36] Sean Anderson of CSU Channel Islands;[37] Todd

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[28] CSU Monterey Bay comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_CSU_Monterey_Bay_Division_of_Science_and_Environmental_Policy_Comment_TN-66758.pdf

[29] CSU on Ocean Affairs comments

[30] CSU Stanislaus comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_CSU_Stanislaus_TN-66764.pdf

[31] Sonoma State University comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Lynn_Stauffer_of_Sonoma_University_TN-66786.pdf

[32] SFSU comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_San_Francisco_State_University_Comments_in_Regards_to_First_Trienneial_Investment_Plan_TN-66800.pdf and http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Krista_Kamer-San_Francisco_State_University_Comments_TN-66846.pdf

[33] CSU COAST comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Beth_Pardieck-CSU_Council_on_Ocean%20Affairs_Science_and_Technology_TN-66836%20.pdf and http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_CSU_on_Ocean_Affairs_and_Technology_Comment_TN-66756.pdf

[34] CSULB comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Zed_Mason_from_CSU_Long_Beach_TN-66861.pdf, http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Dr-Chris_Lowe_of_CSU_Long_Beach_TN-66857.pdf, and http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Kevin_Kelley-California_State_University_Long_Beach_Comments_TN-66843.pdf

[35] Moss Landing Marine Parties comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_Kenneth_Coale-Moss_Landing_Marine_Laboratories_Comments_TN-66844.pdf

[36] HSU comments http://energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Steven_A_Smith-Humboldt_State_University_Comments_TN-66845%20.pdf

[37] Sean Anderson comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_from_Sean_Anderson_of_CSU_Channel_Islands_TN-66826.pdf

Anderson of San Diego State University;[38] Dean Wendt, PhD, on behalf of California Polytechnic State University, San Luis Obispo;[39] and the College of Natural and Social Sciences at CSU Los Angeles.[40]

Congressman Joe Baca[41], FORMA,[42] and the California Community Colleges Chancellor's Office[43] provided comments in support of developing energy innovation clusters centered around areas where community colleges are located. Technoplex also submitted comments in support of developing energy innovation clusters, mentioning that the Energy Commission should leverage community colleges and universities to further its efforts.[44]

Discussion and Staff Response

Staff considered these comments in its preparation of the draft investment plan. Strategic Objective S.10 Leverage California's Regional Innovation Clusters to Accelerate the Deployment of Early-Stage Clean Energy Technologies and Companies discusses energy innovation clusters. Funding for projects will be awarded on a competitive basis.

Other Comments on Cross-Cutting Efforts

Summary of Comments

In its comments, the Electric Power Research Institute (EPRI) requested non-competitive funding to continue its efforts under the Annual Research Portfolio (ARP) programs.[45]

San Diego State University Research Fund (SDSURF) also requested non-competitive funding to continue current Energy Innovation Small Grants Program through an interagency agreement.[46]

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[38] Todd Anderson comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Todd_Anderson-San_Diego_State_University_Comments_TN-66837.pdf

[39] Dean Wendt comments http://energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Dean_Wendt_of_Cal_Poly_TN-66855.pdf

[40] CSULA comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_from_Dr_James_Henderson_of_CSU_Los_Angeles_TN-66822.pdf

[41] Congressman Joe Baca comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-21_Comment_Letter_from_Congressman_Joe_Baca_TN-66862.pdf

[42] FORMA comments http://energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_FORMAs_Comment_Letter_on_EPIC_Program_Funding_Consideration_TN-66805.pdf

[43] CCCCO comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-15_Van_Ton-Quinlivan_Vice_Chancellor_California_Community_College_TN-66696.pdf

[44] Technoplex comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Technoplex_TN-66812.pdf

[45] EPRI comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_the_Electric_Power_Research_Institute_TN-66797.pdf

Southern California Edison (SCE) recommended that the applied research and technology demonstration programs should seek to partner with federal government programs like the American Recovery and Reinvestment Act (ARRA), Advanced Projects Research Agency – Energy (ARPA-e), and the Department of Energy's Sunshot Initiative. SCE also recommended EPIC funding for research and analysis of grid impacts and costs to customers between various renewable deployment scenarios of utility-scale and local distributed generation.[47]

Discussion and Staff Response

With respect to the requests from EPRI and SDSURF for non-competitive funding, EPIC funding will be administered on a competitive basis whenever possible, as required by the CPUC EPIC decision.

Staff agrees that EPIC-funded projects should leverage existing federal, state, and local efforts. In the proposed investment plan, staff incorporated references to many of the programs referenced in stakeholders' comments.

Staff believes that funding for research and analysis of grid impacts and costs to customers can be included in the scope of initiative S7.1 Characterize the Generation Fleet of 2020 for Grid Operator and Planners.

Environmental and Health Impacts

Summary of Comments

Southern California Edison (SCE) provided comments suggesting several applied research topics relating to health and safety. SCE specifically requests research initiatives to examine the possible effects of radio frequency to the public resulting from the deployment of smart grid equipment and possible effects on employee health, equipment maintenance and reliability, and any necessary controls to prevent hazardous exposure due to newer chemicals being used for generation, transmission and distribution equipment as imposed on utilities per environmental regulations.[48]

The Los Angeles Regional Collaborative for Climate Action and Sustainability requested that research under the EPIC consider climate change adaptation, and that decisions should be made after consultation with a diverse stakeholder group.[49]

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[46] SDSURF comments http://energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/

[47] SCE comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Southern_California_Edisons_Comment_Letter_on_CEC_EPIC_Workshop_TN-66819.pdf

[48] *Id.*

[49] Los Angeles Regional Collaborative for Climate Action and Sustainability comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Written_Comments_on_behalf_of_the_LARC_TN-66801.pdf

Discussion and Staff Response

In response to SCE's comments, staff did not include such an initiative in the proposed investment plan, but intends to conduct scoping studies to determine the appropriate research to fund in future investment plans. Staff believes that the IOUs may be best positioned to complete this assessment.

Climate change research is included in the proposed investment plan under Strategic Objective S.5: Reduce the Environmental and Public Health Impacts of Electricity Generation and Make the Electricity System Less Vulnerable to Climate Impacts.

Marine and Hydrokinetic Technologies

Summary of Comments

Many participants offered comments requesting that EPIC funds be used for research, demonstration, and deployment of marine and hydrokinetic technologies. The Ocean Renewable Energy Coalition (OREC), [50] Rikk Kvitek of the California State University, Monterey Bay's Seafloor Mapping Lab,[51] and William Toman[52] suggested EPIC funds from all categories be used to research various aspects of the research, development, deployment and commercialization of ocean renewable technologies. The Renewable Energy Vision Consulting[53] and William F. Lyte of Protean North America[54] suggested funding for offshore wind and wave energy technologies.

Jarett Goldsmith of Garrad Hassan America, Inc. provided written comments in support of providing funding for developing marine and hydrokinetic energy technologies in order to maximize California's resource potential.[55]

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[50] OREC comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Ocean_Renewable_Energy_Coalition_on_Funding_Marine_and_Hydrokinetic_Renewable_Energy_TN-66790.pdf

[51] Rivv Kvitek comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-20_R-_Kvitek_Comment_Letter_TN-66806.pdf

[52] William Toman comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Public_Comment_-_William_Toman_TN-66794.pdf

[53] REVC comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_RE_Vision_Consulting_Comment_Letter_TN-66911.pdf

[54] Protean comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Protean_North_America_Inc_Comments_TN-66757.pdf

[55] Jarrett Goldsmith comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Jarett_Goldsmith_on_Funding_to_Support_California_Marine_and_Hydrokinetic_Energy_TN-66838.pdf

The Southern California Marine Institute[56] and the University of Southern California, Dornsife School[57] requested EPIC funds for its ocean energy research facility that is currently under development.

Discussion and Staff Response

Staff acknowledges stakeholder comments and has included initiatives S4.4 and S4.5 to advance the applied research and development for marine and other offshore technologies. Projects seeking funding through these initiatives will be awarded funds based on a competitive solicitation process.

Technology Demonstration and Deployment

The Technology Demonstration and Deployment section of the EPIC will provide funding for activities to test scalability and preliminary operating issues, bringing promising technologies and strategies closer to market. Comments on technology demonstration and deployment are discussed below, organized by topic.

Energy Efficiency and Demand-Side Management

Summary of Comments

The California Institute for Energy and Environment (CIEE) suggests that EPIC fund research related to various topics to improve demand response in commercial and residential buildings. CIEE specifically identifies research on low-cost smart wireless sensors and low-cost sub-meters, among other items.[58]

Southern California Edison (SCE) suggested funding for the inclusion of power quality metrics for demand-side management (DSM) technologies (e.g. measuring total harmonic distortion) and understanding the impacts on a building's total power consumption and power quality levels. SCE also recommended funding for the development of regional metrics for energy/acre feet of "cold water" transported and used.[59]

Discussion and Staff Response

Staff considered these comments, and included opportunities for demonstration of promising demand response technologies in the proposed investment plan.

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[56] SCMI comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_the_Southern_California_Marine_Institute_TN-66796.pdf

[57] USC Dornsife comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_Comment_Letter_from_USC_Dornsife_TN-66712.pdf

[58] CIEE comments http://energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/

[59] SCE comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Southern_California_Edisons_Comment_Letter_on_CEC_EPIC_Workshop_TN-66819.pdf

Demand-side harmonic distortion was not identified as a priority issue for the first EPIC investment plan. There are currently commercially-available technologies that can deal with this, but the issue may be re-evaluated in future scoping studies and roadmapping efforts. Additionally, water/energy nexus research is not highlighted in this investment plan, but staff acknowledges this is an important area for research. Scoping workshops will be held to prepare for the next investment plan.

Clean Energy Generation

Waste Conversion

Summary of Comments

Sierra Energy,[60] the County Sanitation Districts of Los Angeles County,[61] Salinas Valley Solid Waste Authority (SVSWA),[62] Plasco Energy Group,[63] and Waste Management[64] provided comments supporting technology demonstration and deployment funding for energy conversion deriving from municipal solid waste.

Discussion and Staff Response

Staff considered these comments, and believes that waste-to-energy technologies may be considered under the applied research section of the proposed investment plan to evaluate the environmental and technical performance of new technologies. Given the statutory restrictions on the technologies, staff believes it is prudent to focus research on this topic during the first investment plan to develop more in-state performance data. Staff may reconsider technology demonstrations in future EPIC investment plans based on the research findings and statutory restrictions.

Bioenergy

Summary of Comments

Placer County Air Pollution Control District (PCAPCD) requested that 60 percent of the $27 million identified for technology demonstration and deployment in the first triennial period should go toward community-scale forest biopower projects. PCAPCD further recommended

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[60] Sierra Energy comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Sierra_Energy_EPIC_Comments_TN-66767.pdf

[61] County Sanitation Districts of LA County http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_County_of_Sanitation_Districts_of_Los_Angeles_County_Comments_TN-66751.pdf

[62] SVSWA comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Salinas_Valley_Solid_Waste_Authority_TN-66724.pdf

[63] Plasco comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Plasco_Energy_Group_TN-66787.pdf

[64] Waste Management comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Waste_Management_TN-66807.pdf

that funding for such projects should be continued through the second and third triennial periods.[65]

Pacific Forest Trust,[66] Tri-Agency Economic Development Authority,[67] and the Hambro Group[68] offered comments in support of funding for developing community-scale forest biomass. John A. Paoluccio of CNFbiofuel requested funding for CNFbiofuel's new process for making "alternative fuel from torrefication of woody biomass" be eligible for funding, encouraging the Energy Commission to allow all pre-treatment of biomass and heat transfer of oils and fluids to apply for funding.[69]

The Delta Diablo Sanitation District submitted comments on the behalf of Bay Area Biosolids to Energy (BAB2E) in support of funding for converting biosolids into a clean energy technology.[70]

In addition to applied research and development efforts, Sustainable Conservation suggested that the investment plan include technology demonstration and deployment for funding the "commercialization of air pollution control technologies for dairy digesters."[71]

Discussion and Staff Response

Staff notes PCAPCD's request that 60 percent of the TD&D bioenergy funds be set-aside for community-scale forest biopower projects. However, staff must consider the value of all biomass resource types without prejudice. As such, staff believes that this can be accomplished through a competitive bid solicitation process.

Only RPS-eligible biomass resources will be eligible for TD&D bioenergy funding. A definition of RPS-eligible biomass can be found in the Energy Commission's *Renewable Energy Program Overall Program Guidebook*.[72] Technologies are limited only to those that have not been deployed

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[65] PCAPCD comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-10_Placer_County_Air_Pollution_Control_District_TN-66620.pdf

[66] PFT comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_the_Pacific_Forest_Trust_TN-66750.pdf

[67] Tri-Agency comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_Tri-Agency_Comment_TN-66749.pdf

[68] Hambro Group comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Wes_White_CEO_of_Hambro_Group_TN-66824.pdf

[69] John A. Paolucci comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_J-_Palouccio_Written_Comments_TN-66821.pdf

[70] BAB2E comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Caroline_Quinn_of_Delta_Diablo_Sanitation_District_TN-66854.pdf

[71] Sustainable Conservation comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Sustainable_Conservation_Comments.pdf

72 http://www.energy.ca.gov/2012publications/CEC-300-2012-005/CEC-300-2012-005-ED5-CMF.pdf

at a commercial scale in California. Other restrictions will apply, as noted in the proposed investment plan and individual solicitations.

Under Technology and Deployment, the proposed investment plan includes initiative S13.1, Demonstrate and Appraise the Operational and Performance Characteristics of Pre-Commercial Biomass Conversion Technologies, Generation Systems, and Development Strategies, which calls for demonstrating advanced pollution controls and ultra low emission generation technologies capable of meeting local air quality standards at new or existing facilities.

Other

Summary of Comments

SVTC Solar proposed a set-aside for PV manufacturing facilities that provide pre-commercial development services for new technologies, stating that it is difficult for these technologies to obtain financing.[73]

Republic Solar Highways requested funding support for its solar highways project, which will consist of 15 megawatts of ground mounted solar panels over a 20-mile stretch of Highway 101 on different CalTrans-owned locations throughout Santa Clara County.[74]

The Silicon Valley Leadership Group (SVLG) provided comments in support of Republic Solar Highways' comments regarding the use of EPIC funds to assist in the development of solar highways as a demonstration project.[75]

Discussion and Staff Response

Staff plans to utilize competitive selection processes for applications for EPIC funding. Projects selected for EPIC funding will need to demonstrate investor-owned utility ratepayer benefits and meet other selection criteria.

Grid Operations

Summary of Comments

The California Farm Bureau Federation (CFBF) suggested that EPIC funds be used to fund "electrical line extensions to remote agricultural properties so that land owners can interconnect and contribute the electricity they convert from stationary internal combustion equipment to the grid." CFBF also requested funding to develop methods for "reducing the conflict of

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[73] SVTC Solar comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-07-27_Michele_Rodriguez_TN-66629.pdf

[74] Republic Solar Highways comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-07-31_Republic_Solar_Highways_Comments_TN-66402.pdf

[75] SVLG comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-09-17_Silicon_Valley_Leadership_Group_Letter_of_Support_re_Republic_Solar_Highways_Project_TN-67198.pdf.pdf

transmission line maintenance requirements (e.g., clearances around the lines) with agricultural operations".[76]

Pacific Gas & Electric (PG&E) suggested that EPIC funds should be used to help facilitate the interconnection of renewable energy technologies.[77]

SCE proposed funding for "project initiatives that improve and further integrate the electric grid with customer demand management", including such topics as behavioral analyses to support the quantification of human factors on energy demand and system reliability; examination of opportunities for advancing energy storage to include a wider range of applications, such as customer scale compressed air and pumped hydro; and system integration "with a specific focus on customer-side-of-the-meter tactics".[78]

Varantec requested funding to determine solutions for mitigating negative impacts of distributed generation on grid integration.[79]

The Electric Grid Research Group of the CIEE recommended that EPIC continue to fund applied research and technology demonstration efforts that improve grid operations.[80]

The California ISO recommends that funding be used to "[p]erform demonstration of technologies that enable consumers to base their power usage decisions on a grid state index."[81]

Discussion and Staff Response

Market support to fund electrical line extensions is outside the scope of the EPIC, and as such has not been included in the draft investment plan.

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[76] CFBF comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_California_Farm_Bureau_Federations_Comment_Letter_TN-66702.pdf

[77] PG&E comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Pacific_Gas_and_Electric_Company_TN-66793.pdf

[78] SCE comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Southern_California_Edisons_Comment_Letter_on_CEC_EPIC_Workshop_TN-66819.pdf

[79] Varantec comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-10_Varentec_Comments_TN-66617.pdf

[80] Electric Grid Research Group, CIEE comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Electric_Grid_Research_Group_TN-66820.pdf

[81] California ISO comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_Research_Topic_Area_CAISO_TN-66713.pdf

In response to the comments submitted by SCE, staff has incorporated home- and building – area networks in initiative S2.3 Demonstrate and Evaluate the Integration of Distributed Energy Storage at the Community Scale. Staff has incorporated applied research and development for energy storage within the scope of initiative S2.4 Develop and Test Novel Technologies, Strategies and Applications That Improve the Business Case for Customer-Side Storage; and S8.1 Optimize Grid-Level Energy Storage Deployment with Respect to Location, Size, and Type. SCE's request to include analysis of behavioral issues to support the quantification of human factors on energy demand and system reliability is covered in part by S1.4 Investigate and Improve Understanding of Consumer Behavior to Increase and Sustain Energy Efficiency Improvements in Buildings; and also in S1.6 Reduce the Energy Use of Plug-Load Devices Through the Development of Products, Systems, and Controls, and Evaluation of Consumer Behavior That Affect Energy Use. However, research on human behavior impacts on system reliability is not currently included in the investment plan. It is unclear what the research activity would include. This topic can be further explored and considered in the next investment plan. Staff suggests that opportunities for expanding energy storage technologies can be included within the scope of initiative S2.3.

Demonstration of Electric Vehicles

Summary of Comments

SkyTran recommended that EPIC provide finds for demonstrating automated electric vehicle (AEV) technology to help demonstrate the potential of a zero net energy transportation system.[82]

SCE suggested that EPIC broaden the scope of the definition for electric vehicles to "electric transportation" so that it includes plug-in hybrid electric vehicles, battery electric vehicles, catenary and hybrid-catenary technologies, and several other technologies. SCE asserted that light and heavy duty vehicles, off-road vehicles, port and material handling equipment, and trains should also be considered within the "electric transportation" category. SCE also commented that the Energy Commission should focus its electric transportation efforts on areas within its sole authority under the EPIC program.[83]

Discussion and Staff Response

Staff believes that other funding sources, such as the AB 118 Program, are more appropriate for supporting demonstration of automated electric vehicles for a zero net transportation system.

Staff broadened the definition of electric vehicles to include hybrid vehicles. Staff believes that the initiatives included in the proposed investment plan are sufficiently targeted and within the scope of EPIC.

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[82] SkyTran comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_C_Perkins_of_SkyTran_Comments_on_EPIC_Investment_Plan_TN-66823.pdf

[83] SCE comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Southern_California_Edisons_Comment_Letter_on_CEC_EPIC_Workshop_TN-66819.pdf

Other Comments Related to Technology Demonstration and Deployment

Summary of Comments

American Transportation Management requested funding for the production and deployment of its heating technology.[84]

The California Labor Management Cooperation Committee (LMCC) submitted comments representing IBEW/NECA and ICF International (ICFI). LMCC suggested including "sustainable retrofitted and new construction projects" in the technology maturation curve, LMCC requested that the curve acknowledge the importance of products.[85]

Discussion and Staff Response

Staff acknowledges the comments received from American Transportation Management. Although heating technology may be outside the scope of the CPUC EPIC decision, funding decisions will be based upon a competitive basis.

Staff concurs with the California Labor Management Cooperation Committee (LMCC) Comment that products are important, but staff feels that products are already incorporated in the EPIC innovation pipeline.

Market Facilitation

The Market Facilitation section of the EPIC will address funding gaps in market processes that drive clean energy investment, within IOU service territories. The CPUC EPIC Decision highlighted three focal points for market facilitation activities: regulatory assistance and permit streamlining, workforce development, and program tracking and market research. Comments on each of these market facilitation topics are discussed below.

Regulatory Assistance and Permit Streamlining

Summary of Comments

The Energy Commission received comments opposing regulatory assistance and permit streamlining activities from Pacific Gas & Electric (PG&E). PG&E asserts that use of EPIC funds for regulatory assistance and permit streamlining "is not an appropriate role for energy RD&D funded by ratepayers, even under the 'market facilitation' category. Instead, 'market facilitation' funding should focus on pre-commercial, pre-deployment RD&D activities, such as technology

[84] American Transportation Mgmt comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-25_Public_Comments_-_American_Transportation_Management%2c_Inc._TN-66945.pdf

[85] LMCC comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comments_of_the_California_Labor_Management_Cooperation_Committee_TN-66802.pdf

testing, validation, standard-setting, and monitoring."[86] They also state that Energy Commission investment should not be duplicative of existing efforts.

CCSE supports "[s]tatewide EPIC Program funding to train inspectors, contractors and building officials", stating that it "would lead to greater consistency among and within jurisdictions, and statewide coordination, through online applications or databases and other ancillary support activities, would further increase the effectiveness of the effort." CCSE commented on the importance of EPIC to assist in data sharing on "pricing, consumer adoption, and technology diffusion trends to increase program effectiveness across all clean transportation, renewable energy, and energy efficiency programs." CCSE also suggested the use of market facilitation funds for developing low-cost metering solutions for PEVs.[87]

The Defenders of Wildlife (DOW) offered comments in support of "incentivizing the siting of renewable energy projects in low-conflict areas and on impaired agricultural lands with low habitat value as an important strategy for accelerating renewable energy development and protecting vital natural resources". DOW recommended funding for tools that can aide in developing comprehensive land use and environmental planning document for renewable energy development. DOW also recommended that EPIC should closely coordinate with the Governor's Office of Planning and Research (OPR) to establish a continuous, and easily accessible, grant to assist local jurisdictions as mentioned above. [88]

In its comments, the Los Angeles County Department of Public Works requested regulatory assistance and permit streamlining support for solid waste conversion technologies and projects.[89]

The Agricultural Energy Consumers Association requested EPIC market facilitation funds for streamlining "permitting and interconnection of new biogas facilities which face significant hurdles and barriers".[90]

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[86] Pacific Gas & Electric, Comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Pacific_Gas_and_Electric_Company_TN-66793.pdf

[87] CCSE comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Center_for_Sustainable_Energy_Comments_TN-66850.pdf

[88] Defenders of Wildlife comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Defenders_of_Wildlifes_Comments_on_the_August_2012_EPIC_Workshops_TN-66736.pdf

[89] LA County DPW comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_Los_Angeles_County_Department_of_Public_Works_Comment_TN-66747.pdf

[90] AECA comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Agricultural_Energy_Consumers_Association_Comment_TN-66770.pdf

Discussion and Staff Response

The CPUC staff proposal identifies market facilitation as an EPIC funding category that includes regulatory assistance and permit streamlining . The CPUC EPIC decision generally agrees with the staff proposal. As such, Energy Commission staff has drafted the proposed investment plan to include a range of clean energy activities with initiatives S16.1 through S16.6. These six initiatives aim to improve regulatory processes at the local government level to facilitate clean energy investment.

Staff agrees with CCSE that a standardized and streamlined process is important, and that participation in EPIC investments should be made available to train inspectors and code officials. Initiatives S16.2, S16.3, and S16.6 will support activities within IOU service territories that include, but are not limited to, those recommendations offered by CCSE.

The proposed investment plan suggests that Energy Commission staff work closely with OPR to deliver regulatory assistance and permit streamlining, especially in the development and implementation of planning grants in S16.2 and the General Plan Guidelines update in S16.5. For initiative S16.5, the Energy Commission would hold a competitive request for proposal process to select a contractor to work with OPR. The contractor will work with OPR to include clean energy technologies in the general plan guidelines and ensure local governments have the tools to implement the guidelines in IOU territories.

In response to Los Angeles County Department of Public Works and the Agricultural Energy Consumers Association, the proposed investment plan does not limit Market Facilitation to specific clean energy technologies. Staff believes that the investment concepts presented by both organizations will fall within the scope of activities in S16.1 through S16.6, and projects will be selected on a competitive basis.

Workforce Development

Summary of Comments

Several participants submitted general comments in support of using EPIC funding for workforce development activities. However, staff also received some comments opposing use of EPIC funds for this purpose. The summary below discusses the specific suggestions and comments that staff received from stakeholders regarding this topic.

UC Berkeley's Donald Vial Center on Employment (Donald Vial Center) in the Green Economy suggested that EPIC funding for the workforce development section be "aimed at tackling strategic problems, such as poor quality installation impeding market growth for innovative technologies." The Donald Vial Center also recommended that funding should "focus on skills upgrading for incumbent workers to learn about new technology, and support long-term career pathways versus short-term, one-off training." It also supports establishment of a "panel of workforce agencies and experts to oversee the development of the workforce piece of EPIC's portfolio. This panel should be the body to develop the requests for proposals on workforce

development, evaluate the proposals that relate to workforce issues (which could include research or demonstration projects), and allocate the investments."[91]

The California Division of Apprenticeship Standards (DAS) offered to collaborate with the Energy Commission to develop "upgraded certifications" for apprenticeships in industries related to clean energy.[92]

La Cooperativa de Campesina ("La Cooperativa") supports an increase in the funding amount for workforce development strategies, suggesting that funding be increased from $2 million to $14 million annually. La Cooperativa also suggests that EPIC funds be used to conduct needs analyses to help quantify and qualify employment development in areas with high unemployment and poverty.[93]

Michele Rodriguez's comments suggested that the EPIC investment plan include a workforce gap analysis, marketing and outreach, cost-benefit analyses, and identification of opportunities for financing.[94]

The California Community Colleges Chancellor's Office (CCCCO) suggested that EPIC workforce development should help improve the clean energy infrastructure across the energy innovation clusters in areas where there are community colleges.[95]

The Forma Companies,[96] the Los Angeles Conservation Corps (LACorps) and the Sacramento Regional Conservation Corps (SRCC),[97] the California Construction Industry Labor

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[91] Donald Vial Center http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_UC_Berkeley_TN-66803.pdf

[92] California Division of Apprenticeship Standards, Comments on the Electric Program Investment Charge http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-15_Van_Ton-Quinlivan_Vice_Chancellor_California_Community_College_TN-66696.pdf

[93] La Cooperativa comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_La_Cooperativa_Comments_TN-66833.pdf

[94] Michele Rodriguez comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-20_Michelle_Rodriguez_Public_Comments_TN-66804.pdf

[95] CCCCO comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-15_Van_Ton-Quinlivan_Vice_Chancellor_California_Community_College_TN-66696.pdf

[96] Forma Companies comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comments_from_CEO_of_FORMA_TN-66755.pdf and http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_FORMAs_Comment_Letter_on_EPIC_Program_Funding_Consideration_TN-66805.pdf

[97] LACORPS comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_from_La_Conservation_Corps_on_EPIC_Program_TN-66810.pdf

Management Cooperation Trust (CILMCT),[98] and Larry McLaughlin of the College of the Desert[99] generally support workforce development efforts that provide training and information on technologies being developed under the EPIC.

PG&E does not support the use of EPIC funds to support the development of a clean energy workforce clearinghouse, asserting that existing IOU and industry efforts already provide support through similar mechanisms.[100]

Taft College submitted comments to suggest a collaborative effort with the Energy Commission to develop "training programs and research opportunities in renewable energy technologies in oilfield operation".[101]

Donald Henry of Village Partners, Inc. requested funding for a mixed-use, renewable energy facility that would provide educational research and apprenticeship opportunities for students, as well as conference center or office space for private companies in the clean energy industry.[102]

LMCC discussed the importance of leveraging the highly-skilled labor force and the benefits of state approved apprenticeship programs in forming a well-trained clean energy labor force. LMCC also provided information on its work in developing a "zero net energy / automated building technology training and certification incorporating the CALCTP model CALCTP of training and certification;" and "A Smart Microgrid / Facility Based Energy Storage system training and certification program also based on the CALCTP format."[103]

Timothy Hoone of the Del Norte Workforce Center submitted comments requesting EPIC funding to support the re-training of Del Norte County's workforce "to work in a variety of

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[98] CILMCT comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comments_of_the_California_Construction_Industry_Labor_Management_Cooperation_Trust_TN-66771.pdf

[99] Larry McLaughlin comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_Comments_by_Larry_McLaughlin_on_EPIC_Workshop_TN-67350.pdf

[100] PG&E comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Pacific_Gas_and_Electric_Company_TN-66793.pdf

[101] Taft College comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_Comment_Letter_from_Taft_College_TN-66710.pdf

[102] Village Partners comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Donald_Henry-Village%20Partners_Inc_Comments_TN-66832.pdf

[103] LMCC comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comments_of_the_California_Labor_Management_Cooperation_Committee_TN-66802.pdf

occupations supporting biomass and other green energy production processes."[104]

Discussion and Staff Response

Staff received stakeholder comments suggesting that S15.1 may be duplicative of existing efforts. As a result, staff has removed S15.1 from the proposed investment plan. Staff suggests reevaluating whether EPIC funds are needed for a workforce assessment in future investment plans.

Energy Commission staff will work closely with workforce agencies and other stakeholders when implementing the training and apprenticeship proposed initiative.

Program Tracking and Market Research

Summary of Comments

During the public workshops and in written comments, stakeholders generally emphasized the need for tracking the status and measuring the success of projects receiving EPIC funding. A summary of comments regarding specific recommendations related to program tracking and market research efforts is provided below.

Kristina Skierka of Energy Initiatives supported roadmapping as part of the EPIC process, encouraging the Energy Commission to leverage existing roadmaps and targets identified in various plans and roadmaps.[105]

Comments provided by the Lawrence Berkeley National Laboratory,[106] California Wind Energy Association (CalWEA),[107] Terra-Gen Operating Company,[108] and Audubon California[109] supported assessments of the environmental impact of renewable energy installations, including issues related to siting.

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[104] Timothy Hoone comments http://energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_Timothy_Hoone-Workhouse_Center_Comments_TN-66852.pdf

[105] Kristina Skierka comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comments_from_Kristina_Skierka_of_Energy_Initiatives_TN-66860.pdf

[106] LBNL comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-31_Lawrence_Berkeley_National_Laboratory_Comment_TN-67212.pdf

[107] CalWEA comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-24_Comment_Letter_from_California_Wind_Energy_Association_TN-66933.pdf

[108] Terra-Gen comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-27_TGP_Comment_Letter_re_EPIC_Program_TN-66946.pdf

[109] Audubon California comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-24_Comment_Letter_from_Audubon_California_re_EPIC_Program_TN-66954.pdf

Pacific Gas and Electric (PG&E) states that EPIC investments into data system architecture that would allow easy and long-term access to the variety of information being developed would help the state reduce costs to gather this information going forward.[110]

The University of California, Los Angeles' ENGAGE Research Group requested inclusion of behavioral studies related to smart meter development and deployment.[111]

Discussion and Staff Response

Staff considered these comments in its preparation of the proposed investment plan. Staff has included Strategic Objectives S.5 to address environmental impacts of renewable energy installations.

In response to comments submitted by Kristina Skierka, the final proposed investment plan includes initiative S10.3 to establish detailed roadmaps for applied research and S18.3 to build upon roadmaps for applied research, technology demonstration, and market facilitation activities.

With respect to PG&E's comment, staff has incorporated a web portal in initiative S.18.1 that may serve the intended purpose.

Other Comments Related to Market Facilitation

Summary of Comments

The California Energy Efficiency Industry Council suggested inclusion of gap analyses, needs assessments, and information dissemination activities related to the energy efficiency industry in California.[112]

Discussion and Staff Response

Staff believes that assessment projects for energy efficiency and zero net energy may be included under the scope of various applied research and market facilitation initiatives in the proposed investment plan, specifically under Strategic Objectives S.1, S.2, S.10, and S.18. Projects will be selected on a competitive basis.

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[110] Pacific Gas & Electric comments http://energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Pacific_Gas_and_Electric_Company_TN-66793.pdf

[111] UCLA ENGAGE comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-14_Comment_Letter_from_UCLA_ENGAGE_Research_Group_of_UCLA_TN-66792.pdf

[112] Efficiency Council comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_from_the_California_Energy_Efficiency_Industry_Council_TN-66825.pdf

New Solar Homes Partnership

Summary of Comments

The Solar Energy Industries Association (SEIA) and the Vote Solar Initiative submitted comments requesting that the New Solar Homes Partnership be incorporated as part of the EPIC program, with a funding amount of $120 million over three years.[113]

Discussion and Staff Response

The draft proposed investment plan suggests funding for the New Solar Homes Partnership at a level of $25 million per year for the 2012-2014 investment period.

Program Administration

Summary of Comments

CCSE discussed the need to conduct stakeholder outreach by providing data and lessons learned from existing pilots and projects, which may assist in the development and deployment of best practices guides.[114]

Communities Allied for Distributed Energy Resources suggested that EPIC provide $1.5 million for developing the "EPIC Community/Utility Partnership (CUP)" to organize regional meetings and symposiums to update stakeholders on the progress of EPIC projects.[115]

Mark Cherniack of New Buildings Institute requested clarification on the "relationship of the EPIC plan and its relationship with the CPUC's Strategic Plan(and the CEC's Plan for HVAC), the resulting Action Plans and roadmaps including Codes & Standards AP, HVAC AP, Lighting AP, Plug Loads (Roadmap), Research & Technology AP (launching shortly), and Zero Net Energy (Commercial) AP, along with the somewhat more detailed investor-owned utilities energy efficiency Program Investment Plans for 2013-2014."[116]

California ISO suggested that the Energy Commission's investment plan not be finalized until all IOUs have published their investment plans to avoid duplication.[117]

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[113] SEIA and VSI comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_from_Solar_Energy_Industries_Association_TN-66816.pdf

[114] CCSE comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Center_for_Sustainable_Energy_Comments_TN-66850.pdf

[115] CADER comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_the_Communities_Allied_for_Distributed_Energy_Resources_TN-66762.pdf

[116] Mark Cherniack comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Mark_Cherniack_Comments_TN-66849.pdf

[117] California ISO comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_California_Independent_System_Operator_Corporation_Comments_TN-66835.pdf

Discussion and Staff Response

Staff has considered these comments in its preparation of the draft investment plan. The activities suggested by CCSE and Communities Allied for Distributed Energy Resources fall within the scope of market facilitation initiatives included in the proposed investment plan. Projects will be selected on a competitive basis, and must be able to demonstrate ratepayer benefits in investor-owned utility territories.

With respect to comments submitted by the California ISO, staff must work within the constraints of the schedule the CPUC has determined in its proceeding. Specifically, the CPUC's EPIC Phase 2 decision requires the Energy Commission to submit its investment plan on November 1, the same deadline the CPUC set for the IOUs. However, staff is working collaboratively with the IOUs to ensure that the Energy Commission's investment plan is not duplicative of their plans.

Program Benefits Assessment

Summary of Comments

The University of California, Davis (UC Davis) commented that the Energy Commission's investment plan should provide clear objectives, effective methods, and metrics for analyzing the success of EPIC-funded activities.[118]

Clean Tech Los Angeles offered comments that presented a program similar to the EPIC, with slight modifications. In its comments, Clean Tech Los Angeles presented several examples of metrics that could be used to determine the success of the EPIC.[119]

Discussion and Staff Response

Staff has considered these comments in its preparation of the draft investment plan.

General Comments / Other Topics

This section discusses comments addressing other chapters of the proposed investment plan, as well as general comments.

Summary of Comments

The City of San Jose[120] and Valley Energy Consulting[121] expressed general support for clean energy and EPIC activities.

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[118] UC Davis comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_UC_Davis_Turrentine_Garas_Barr_Comments_TN-66809.pdf and http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_Comment_Letter_from_UC_Davis_TN-66789.pdf

[119] Clean Tech LA comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-13_Cleantech_LA_Comments_TN-66627.pdf

The following stakeholder groups offered assistance through their organizations or member groups: Susan Lyte of the Pasadena Kiwanis Club;[122] TMAD Taylor & Gaines;[123] California Conservation Corps;[124] and Diana C. Lyte.[125]

The California Independent System Operator (California ISO) provided several recommendations for use of EPIC funds. California ISO suggested the "[e]stablishment of a centralized database to collect, and make publicly available, Distributed Energy Resource (DER) penetration level data within the state of California." The comments recommended that the "database should collect and provide historical production data, aggregated by zip code, in 15 minute intervals refreshed on a daily basis. This data would be securely made available to specific regulatory agencies… for their use in forecasting, reporting, or studies." [126]

Mehta Associates and Kumana Associates commented that the EPIC investment plan should incorporate Assembly Bill 32 (Nunez, 2006), and that the Energy Commission should coordinate with other state agencies moving forward.[127]

Robert Stanley provided information about his "[z]ero CO2 bus system."[128]

Gridco Systems submitted a Notification of Interest in the EPIC program, and provided information about its "advanced power distribution hardware and software."[129]

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[120] City of San Jose comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_Comment_Letter_from_the_City_of_San_Jose_TN-66717.pdf
[121] VEC comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_VEC_Letter_of_Interest_for_the_EPIC_Program_TN-66731.pdf
[122] Susan Lyte comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Public_Comment_Susan_Lyte_TN-66763.pdf
[123] TMAD comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_TMAD_TAYLOR_and_GAINES_Comment_TN-66766.pdf
[124] California Conservation Corps comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_the_California_Conservation_Corps_TN-66791.pdf
[125] Diana C. Lyte comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Public_Comment_Diana_Lyte_TN-66765.pdf
[126] California ISO comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_California_Independent_System_Operator_Corporation_Comments_TN-66835.pdf
[127] Mehta Associates comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-21_Mehta_Associates_and_Kumana_Associates_Comments_TN-66875.pdf
[128] Robert Stanley comments http://energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-09_Robert_Stanley_Comment_TN-66638.pdf
[129] Gridco Systems comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-23_Gridco_Systems_Notification_of_Interest_in_EPIC_Program_TN-66932.pdf

Frank Brandt[130] and Nicole Raymond[131] commented in opposition of collecting EPIC funds, citing that the draft proposed investment plan does not have sufficient value or ratepayer benefit.

Discussion and Staff Response

Staff considered these comments in its preparation of the draft investment plan.

Staff believes that the California ISO's recommendation to establish a publicly-available database for DER penetration level data may be within the scope of Strategic Objective S.18. However, more investigation is needed on this suggestion to determine cost of the potential project and to verify that it is not already being done elsewhere. This project may be better suited to the next investment plan.

Market Support for Fuel Cell Technologies

Summary of Comments

ReliOn, Inc. requested that EPIC include funding to resume the Emerging Renewables Program, or a similar program that provides incentives for fuel cell systems.[132]

Discussion and Staff Response

The CPUC's EPIC Phase 2 decision indicates that EPIC funds should not be used to support a continuation of the ERP. As an alternative, stakeholders may apply to the California Public Utilities Commission's Self Generation Incentive Program (SGIP), which provides incentives for fuel cell systems.

[130] Frank Brandt comments http://energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-07-25_Comments_by_F_Brandt_to_EPIC_Workshop_TN-66343.pdf and http://energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-15_Public_Comment_Frank_Brandt_TN-66693.pdf

[131] Nicole Raymond comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Public_Comment_Nicole_Raymond_TN-66858.pdf

[132] ReliOn comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-08_ReliOn_Comments_TN-66532.pdf

APPENDIX B:
Summary of Stakeholder Comments and Energy Commission Staff Responses on *The Electric Program Investment Charge Proposed 2012-14 Triennial Investment Plan*

The Energy Commission held a public workshop to discuss the draft *Electric Program Investment Charge Proposed 2012-14 Triennial Investment Plan* (draft proposed investment plan) on September 27, 2012, in Sacramento, California. Several participants offered verbal public comment during these workshops, and many others submitted written comments to the Energy Commission for consideration. In this appendix, staff summarizes and responds to all comments submitted through October 22, 2012.

This appendix organizes comments by chapter of the proposed investment plan: Applied Research and Development, Technology Demonstration and Deployment, Market Facilitation, New Solar Homes Partnership, Program Administration, and Program Benefits Assessment, with general comments grouped together in a seventh section. Each section includes a summary of comments and Energy Commission staff responses. Please note that the initiative numbers in the proposed investment plan may differ from those identified in the draft proposed investment plan.

As summarized below, many of the written comments indicated an interest in participating in funding opportunities provided by the EPIC program. The Energy Commission plans to begin offering opportunities for funding through EPIC after July 2013. The Energy Commission plans to utilize competitive selection processes for applications for EPIC funding. Projects selected for EPIC funding will need to demonstrate investor-owned utility ratepayer benefits and meet other selection criteria.

Applied Research and Development

The Applied Research and Development chapter of the proposed investment plan describes initiatives on the following topics: energy efficiency and demand response; clean generation; smart grid-enabling clean energy; and cross-cutting. Stakeholders provided the following comments specific to these initiatives.

Energy Efficiency and Demand Response

Summary of Comments

Oceans Edge Network Inc. (OEN) expressed support for Strategic Objectives S1, specifically identifying S1.1, S1.5, S1.8, and S1.9. OEN commented that it has already developed technologies that align with these initiatives.[133]

TMAD Taylor and Gaines Strategic Consulting (TTGSC) provided comments that were generally supportive of Strategic Objectives S.1 and S.2.[134]

The National Asian American Coalition expressed strong support for S1.1 and S1.6.[135]

Future Heat, LLC expressed strong support for S1.2.[136]

Ventures Resources, LLC submitted comments in support of S1.4. [137]

The University of La Verne submitted comments in support of S1.5. [138]

The Efficiency Council provided comments that were generally supportive of the program scope. The Efficiency Council was pleased to see energy efficiency technology and cross-cutting demand-side innovations in many of the initiatives, but cautioned the Energy Commission to make sure that "initiatives are not so narrowly focused as to unintentionally pick technology winners or create solutions that are too customized to promote scalability, especially in bridging the commercialization valley of death." [139]

The California Institute for Energy and Environment of the University of California (CIEE) suggested that traditional HVAC design methodology "leaves a huge amount of low- and no-cost efficiency untapped with existing technology." In its comments, CIEE asserted that the ability to achieve the efficiency potential of new technology will be impeded by traditional

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[133] OEN comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Oceans_Edge_Networks_Inc_Comment_Letter_TN-67472.pdf

[134] TTGSC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_TTG_Strategic_Consulting_comment_TN-67481.pdf

[135] NAAC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_National_Asian_American_Coalitions_Comments_TN-67474.pdf

[136] Future Heat comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_Future_Heat_LLC_Comments_TN-67355.pdf

[137]Venture Resources comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Venture_Resources_LLCs_Comments_TN-67480.pdf

[138] University of La Verne comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_University_of_La_Verne_comments_TN-67509.pdf

[139] Efficiency Council comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Energy_Efficiency_Industry_Councils_Comments_TN-67462.pdf

HVAC design methodology. CIEE provided specific recommendations for revising S1.2 to include language about research and development for HVAC design methodology.[140]

Discussion and Staff Response

Staff acknowledges stakeholder support for research activities related to energy efficiency and has considered these comments in preparation of the proposed investment plan.

Please note that S1.5 has been removed from the proposed investment plan. Though staff believes it is an important area with the potential to reduce energy associated with water production and treatment, staff has withdrawn this initiative pending completion of a water roadmap to determine research needs and feasibility.

Staff acknowledges stakeholder support for research activities related to HVAC. Initiative S1.2 has been modified to include research and improvements to "existing" technologies and HVAC building design methodology.

Clean Generation

Bioenergy

Summary of Comments

The California Biomass Energy Alliance's (CBEA) comments supported "targeting projects that address biomass processing and handling systems" as identified in S3.2. CBEA recommended that the Energy Commission "amend the statement made on page 54 that "new biopower systems will only be economically sustainable at sizes of smaller than 10 MW." Instead, CBEA suggested "deleting [the] suggested 10 MW goal and instead focus[ing] on sizing according to need." [141]

The Joint Bioenergy Parties suggested the use of EPIC funds "to address sustainable forestry issues", noting that the funding "should not limit forest biomass to thermochemical conversion." The Joint Bioenergy Parties also recommended the inclusion of a new strategic objective in the applied research category "to quantify and demonstrate greenhouse gas emissions benefits from different types of bioenergy projects."[142]

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[140] CIEE comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Institute_for_Energy_and_Environment_University_of_California_Comments_TN-67461.pdf

[141] CBEA comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Biomass_Energy_Alliance_Comments_TN-67471.pdf

[142] Joint Bioenergy Parties comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Joint_Bioenergy_Parties_Comments_TN-67459.pdf

The American Biogas Council (ABC)[143] and CH4 Energy[144] requested the addition of a new applied research initiative to "quantify and demonstrate greenhouse gas emissions benefits from different types of biogas projects." The participants suggested that "[d]emonstrating the benefits for different fuel types and applications would facilitate adoption of carbon offset protocols and thereby enable additional financing options that would help to make biogas systems economically competitive."

The Nature Conservancy, Natural Resources Defense Council, and Union of Concerned Scientists (Joint Environmental Parties) submitted joint comments. The Joint Environmental Parties expressed support for "research on reducing the environmental impacts of bioenergy technologies, including harvest, processing, conversion, and transportation" as identified in S3.2.[145]

Waste Management's (WM) comments were generally supportive of EPIC. Specifically, WM expressed support for S3.2 and S4.2. With respect to S3.2, WM suggested EPIC be proactive in funding programs that increase the use of proven technologies facing economic barriers, such as the highest and best use of anaerobic digesters at publicly owned wastewater treatment plants. WM also suggested that EPIC should fund research that will result in increased deployment of biogas and biomethane technologies.

While WM agreed with S4.2, it suggested that EPIC funding should not differentiate between the treatments of on-site generation as compared to offsite use of biogas to produce electrical power. WM recommended opposed restricting biogas eligibility to on-site generation under EPIC.[146]

The California Climate and Agriculture Network (CCAN) expressed support for S3.2 and S5.2, but also offered a few recommendations for revisions. CCAN recommended that the definition of sustainable bioenergy used in S3.2 be expanded to include the protection of agricultural soil resources. [147]

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[143] American Biogas Council comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_American_Biogas_Council_Comment_TN-67534.pdf

[144] CH4 Energy comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_CH4_Energy_Comment_TN-67535.pdf

[145] Joint Environmental Parties comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_NRDC_and_the_Union_of_Concerned_Scientists_Comments_TN-67492.pdf

[146] Waste Management comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Waste_Management_Comments_TN-67445.pdf

[147] CCAN comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Climate_and_Agriculture_Network_Comments_TN-67455.pdf

Schatz Energy Research Center (SERC) is supportive of Strategic Objective S3.2.[148]

Discussion and Staff Response

In response to comments received by various participants, staff has expanded initiative S3.2 to specify research on sustainability including research needed to maintain soil fertility and tilth.

Staff acknowledges CBEA's comments. While larger facilities may be developed at sites that can support ecologically sustainable harvest and collection of biomass from locally derived feedstocks, recent development proposals suggest that most new facilities will be small. Staff believes that it is prudent to focus research on streamlining fuel delivery methods to reduce fuel costs rather than focus on building larger facilities that may or may not be sustainable as diesel prices continue to rise. Staff further acknowledges and agrees with California Biomass Energy Alliance's comment that the optimal size is defined by site location and biomass feedstock density. The 10 MW size is not a goal or a limit on future development.

In response to comments submitted by the Joint Bioenergy Parties, staff removed language that suggested funding for forest biomass would be limited to thermochemical conversion. However, staff does stress that the technologies and strategies funded under this initiative must demonstrate a technology that has not been commercially deployed within California.

The American Biogas Council and CH4 Energy requested the addition of a new applied research initiative to "quantify and demonstrate greenhouse gas emissions benefits from different types of biogas projects." This type of research may be considered under initiative S5.4. Alternately, the Greenhouse Gas Reduction Fund may support this type of research. Staff will ensure that research funded through EPIC does not duplicate efforts funded by the Greenhouse Gas Reduction Fund.[149]

Because the topic of biogas-biomethane technologies includes issues related to the natural gas system, natural gas research or the Alternative and Renewable Fuel and Vehicle Technology Program (AB118) may be more appropriate sources of funding.[150] The Energy Commission will seek opportunities outside of EPIC to advance these technologies in California.

Based on data available to the Energy Commission, anaerobic digesters have been commercially demonstrated at wastewater treatment plants in California. Therefore, funding for expanding this technology would fall outside of the scope of EPIC. However, to the extent that this technology can be deployed in a way that demonstrates an innovative pre-commercial

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[148] SERC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Schatz_Energy_Research_Centers_Comments_TN-67487.pdf

149 Assembly Bill 1532, Chapter 807, Statutes of 2012. http://www.leginfo.ca.gov/pub/11-12/bill/asm/ab_1501-1550/ab_1532_bill_20120930_chaptered.pdf

[150] For further information, see http://www.energy.ca.gov/2011publications/CEC-500-2011-029/CEC-500-2011-029.pdf and http://www.energy.ca.gov/ab118/index.html

deployment strategy with benefits for IOU ratepayers, EPIC funding may be available to demonstrate that approach. In addition, pre-commercial generation and emissions controls may be eligible for funding at existing WWTPs. Applicants for funding will be required to demonstrate how proposed technologies and strategies meet the goals set forth in EPIC.

Distributed Generation

Summary of Comments

Oceans Edge Network Inc. (OEN) expressed support for Strategic Objective S.3, with specific focus on S3.1. OEN provided information about its technology that uses compressed air to produce electricity that can be utility scale and does not use fossil fuels.[151]

DWEA recommended expanding the scope of S3.3 to include distributed wind systems.[152]

Discussion and Staff Response

Staff included the development and evaluation of distributed wind systems as a research category in the innovation cluster grants (S10.2). Distributed wind technologies will also be eligible as a component of energy-smart community demonstrations (S12.2). Additional distributed wind RD&D activities will be identified in gap analysis conducted in the first year of the investment plan (S10.3).

Utility-Scale Generation

Summary of Comments

Oceans Edge Network Inc. (OEN) expressed support for Strategic Objective S.4, with specific focus on S4.2. OEN provided information about its technology that uses compressed air to produce electricity that can be utility scale and does not use fossil fuels.[153]

BirdsVision's comments also supported S4.2.[154]

The California Geothermal Energy Collaborative (CGEC) at UC Davis is in strong support of S4.3.[155]

Ventures Resources, LLC submitted comments in support of S4.5.[156]

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[151] OEN comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Oceans_Edge_Networks_Inc_Comment_Letter_TN-67472.pdf

[152] DWEA comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_DWEA_Comments_TN-67456.pdf

[153] OEN comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Oceans_Edge_Networks_Inc_Comment_Letter_TN-67472.pdf

[154] BirdsVision comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_BirdsVisions_Comments_TN-67465.pdf

[155] CGEC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-27_UC_Davis_Comments_TN-67473.pdf

Discussion and Staff Response

Staff acknowledges stakeholder support for the initiatives mentioned above.

Marine and Hydrokinetic Technologies

Summary of Comments

Jarett Goldsmith of GL Garrad Hassan provided comments generally supportive of Strategic Objectives S4, S5, and S10. Mr. Goldsmith specifically identified his support for initiatives S4.4, S4.5, S5.3, and S10.2; he also supports the marine and hydrokinetic (MHK) advisory group, and suggested that a representative from GL Garrad Hassan be included in the group.[157]

William Toman provided comments in support of S4.4, S4.5, S5.5, and S10.2.

The California State Lands Commission (CSLC) and the Ocean Protection Council (OPC) submitted joint comments. The participants generally support the advancement of marine renewable energy technology, specifically identifying support for S4.4, S4.5, S5.3, S10.2, and S10.3. Moreover, the participants support funding for economic evaluations, environmental research, and technology needs assessments that can advise the development of deep water offshore wind energy systems in California.[158]

Digital Geographic Research Corporation (DGRC) expressed support for comments provided by the California State Lands Commission and the Ocean Protection Council regarding development of ocean wave and offshore marine renewable energy systems.[159]

The California State University Northridge Biology Department's Ocean Studies Institute (OSI) was generally supportive of EPIC. OSI suggested that it can support the goals of EPIC by providing facilities in a variety of wave, tidal, and physical environments with the necessary components for developers to test prototypes under S10.2.[160]

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[156] Venture Resources comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Venture_Resources_LLCs_Comments_TN-67480.pdf

[157] Jarett Goldsmith comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Marine_and_Hydrokinetic_Energy_Comments_TN-67442.pdf

[158] CSLC and OPC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-26_CSLC_and_OPC_Joint_Comment_Letter_from_re_EPIC_Program_TN-67324.pdf

[159] *Id.*

[160] OSI comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_State_University_Northridge_Biology_Department_Comment_Letter_TN-67466.pdf

Sean D. Moore of Moore Commerce Pty Ltd. provided information about the Protean™ wave energy converter that he developed. He suggested that the technology could be a well-utilized application to develop wave energy in California.[161]

David Hull and Associates,[162] Ocean Renewable Power Company,[163] Ocean Wave Energy Company,[164] Sound & Sea Technology, Inc.,[165] Verdant Power,[166] Ecomerit Technologies, LLC,[167] and Dresser-Rand Company[168] provided comments in support of EPIC activities related to wave and offshore wind, specifically expressing support for S4.4, S4.5, S5.3, and S10.2 of the applied research section of the draft investment plan.

The California State University Council on Ocean Affairs, Science and Technology (COAST) [169] and the Coastal Marine Institute at San Diego State University[170] expressed support for S4.4, S4.5, S5.3, and S10.2 in the applied research section of the draft investment plan.

Lieutenant Governor Gavin Newsom,[171] the Ocean Renewable Energy Coalition,[172] and William F. Lyte of Protean North America[173] expressed support for S4.4, S4.5, S5.3, and S10.2 in the applied research section of the draft investment plan.

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[161]Ocean Wave Energy comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Ocean_Wave_Energy_Comments_TN-67395.pdf

[162] David Hull and Associates comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_David_Hull_and_Associates_Comments_TN-67397.pdf

[163] Ocean Renewable Power Company comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Ocean_Renewable_Power_Company_Comments_TN-67399.pdf

[164]Ocean Wave Energy Company comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-29_Ocean_Wave_Energy_Company_Comments_TN-67391.pdf

[165] Sound & Sea Technology comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Wave_and_Offshore_Wind_Comments_TN-67446.pdf

[166] Verdant Power comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Verdant_Power_Comments_TN-67450.pdf

[167]Ecomerit Technologies comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Ecomerit_Technologies_LLCs_Comments_TN-67483.pdf

[168] Dresser-Rand Company comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Dresser-Rand_Company_Comments_TN-67392.pdf

[169] CSU COAST comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02-CSU_COAST_Comments_TN-67454.pdf

[170] Coastal Marine Institute at SDSU comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_CMIs_Comments_TN-67503.pdf

[171]Lieutenant Governor Gavin Newsom comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_Lieutenant_Governor_Gavin_Newsom_comments%20on_Marine_Renewable_Resources_TN-67508.pdf

[172] OREC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Ocean_Renewable_Energy_Coalition_Comments_TN-67400%20.pdf

The Center for Coastal Marine Sciences at Cal Poly[174] and Re Vision Consulting provided comments in support of S4.4, S4.5, and S10.2 in the applied research section of the draft plan.[175]

The California Marine and Intermodal Transportation System Advisory Council (CALMITSAC) provided comments in support of EPIC activities related to wave and offshore wind, specifically expressing support for S4.4, S4.5, S5.3, and Strategic Objective S.9 in the applied research section of the draft investment plan.[176]

Discussion and Staff Response

Staff acknowledges stakeholder support for research activities related to wave energy and offshore wind applied research; staff has considered these comments in preparing the proposed investment plan. As noted by the California State Lands Commission and Ocean Protection Council, applied research in offshore renewables will focus on economic evaluations, environmental research and technology needs assessments. Funding for specific projects will be awarded under a competitive solicitation process.

Environmental and Public Health Impacts of Electricity Generation

Summary of Comments

The California Wind Energy Association (Cal WEA) offered general support of the initiatives in the applied research section of the proposed investment plan, specifically identifying S5.2 as a valuable inclusion. CalWEA suggested a slight modification to Table 6 in the draft investment plan to indicate that initiative S5.2 also contributes to economic development and lowered costs.[177]

The Center for Energy Efficiency and Renewable Technologies (CEERT) offered comments in support of S5.2. CEERT recommended that the Energy Commission "widen the funding parameters under the Applied Research and Development Strategic Objective to cover a wider range of topics; specifically, species and habitat issues that could impede permitting."[178]

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[173] William F. Lyte comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-23_Protean_North_America_Inc_Comment_TN-67261.pdf

[174] Center for Coastal Marine Sciences comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Center_for_Coastal_Marine_Sciences_at_Cal_Poly_comments_TN-67479.pdf

[175] ReVision Consulting comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Re_Vision_Consultings_Comments_TN-67405.pdf

[176] CALMITSAC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Marine_and_Intermodal_Transportation_System_Advisory_Council_Comments_TN-67452r.pdf

[177] CalWEA comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_California_Wind_Energy_Association_Comments_TN-67402.pdf

[178] CEERT comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_CEERT_Comments_TN-67469.pdf

CCAN recommended that the scope of S5.2 be expanded to "fund research examining the cumulative impacts of renewable energy development on agricultural production, with special focus on the Central and Imperial valleys, including impacts to food production, natural resources, and rural communities."[179]

Lawrence Berkeley National Laboratory (LBNL) provided comments suggesting that upfront and life-cycle assessments of environmental impacts of renewable energy installations should be prioritized due to the potential presence of environmental issues related to energy production within several initiatives included in the EPIC plan. LBNL identified broad areas of research that would provide insights on these impacts.[180]

The Joint Environmental Parties expressed strong support for Strategic Objective S.5, asserting that the initiatives under this objective will help advise decision makers of the "environmental costs and benefits of renewable energy policies." The Joint Environmental Parties provided specific comments relating to each of the initiatives in S.5. With respect to S5.3, the Parties "encourage the adoption and prioritization of research on reducing energy stresses to water, aquatic resources, and inland and coastal fish, including salmon." The Parties strongly support S5.4 and urge the Energy Commission to include it in the final investment plan.[181]

Both the University of La Verne[182] and BirdsVision[183] submitted comments in support of S5.3. For detailed information on other related comments submitted by BirdsVision, please see the Technology Demonstration and Deployment section of this appendix.

The Sonoma County Water Agency (SCWA) provided comments in support of S5.3. SCWA suggested that additional language be included in this initiative to address understanding of the meteorological process to help optimize reservoir management.[184]

The California Council on Science and Technology (CCST) submitted comments recommending several areas for focusing EPIC funds, as identified in its report, *California's Energy Future: The View to 2050.* CCST's recommendations include research to facilitate "better use of smart meter

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[179] CCAN comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Climate_and_Agriculture_Network_Comments_TN-67455.pdf

[180] LBNL comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-31_Lawrence_Berkeley_National_Laboratory_Comment_TN-67212.pdf

[181] Joint Environmental Parties comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_NRDC_and_the_Union_of_Concerned_Scientists_Comments_TN-67492.pdf

[182] University of La Verne comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_University_of_La_Verne_comments_TN-67509.pdf

[183] BirdsVision comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_BirdsVisions_Comments_TN-67465.pdf

[184] SCWA comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Sonoma_County_Water_Agencys_Comments_TN-67482.pdf

data in energy efficiency program design and implementation" and to improve building retrofit policies. CCST also recommended research on the following topics: resource balancing and integration to improve grid reliability; climate change impacts on electricity generation resources and demand; examination of the efficacy, cost, and early market opportunities of carbon capture and sequestration; examination of electricity alternatives to facilitate better transmission planning and integration; development of environmental metrics for use in the planning process; analysis of electrification potential; analysis of resource potential and greenhouse gas impacts of biomass energy; and mitigation potential and costs of non-energy and non-CO2 greenhouse gases.

Discussion and Staff Response

Staff considered these comments in preparing the proposed investment plan. Staff revised Table 6 according to CalWEA's suggested modification.

Staff considered CEERT's comments and revised S5.2 so that it has a broader scope, as suggested.

In response to comments received by various participants, staff has expanded initiative S3.2 to specify research on sustainability, including research needed to maintain soil fertility and tilth.

With respect to comments submitted by LBNL, the proposed investment plan includes Strategic Objective S.5 to examine the environmental and health impacts of renewable integration.

Staff has added wording to S5.3 to reflect Sonoma County Water Agency comments.

Regarding the comments from CCST, staff notes that almost all of the research areas mentioned in the CCST report are addressed in initiatives proposed in this plan, including Strategic Objectives S.5, S.6, S.16, and S.18. EPIC funding is proposed to be used for matching federal funding of a carbon sequestration demonstration project. Further research on carbon sequestration, including beneficial uses of carbon dioxide, will be investigated for the next triennial investment plan.

Other Comments on Clean Energy Generation

Summary of Comments

The Joint Environmental Parties "strongly support using EPIC research funds to develop and refine tools, models, and simulations to enhance our energy planning to meet our 2050 emission reduction goals." The Parties "encourage the Commission to look beyond the 2020 horizon and prepare for an energy grid that can support higher levels of renewables far beyond our current

33% mandate, as well as much higher overall electricity generation needs to accommodate the widespread electrification of our vehicle fleet."[185]

Discussion and Staff Response

Staff acknowledges stakeholder support for the activities discussed above and has considered these comments in preparation of the proposed investment plan. As this is the first of three triennial investment plans, it is important to fund the most urgent projects upfront, while maintaining a balance of investment risk and keeping an eye on long term goals. Initial research activities include a detailed gap analysis and scenario assessment to identify future initiatives with near-term, mid-term, and long-term priorities (S10.3).

Smart Grid-Enabling Clean Energy

Summary of Comments

Electric Grid Research's (EGR) comments include suggested clarification and additional specificity to S6.4. EGR suggested that S6.4 be revised to include research for the development of data analytics and algorithms for coordinating and deploying smart grid devices such as synchrophasor measurement.[186]

Oceans Edge Network stated that it has started work on activities discussed in Strategic Objectives S.6 and S.9. OEN started to develop smart charging EV stations that are run by solar and wind, and is also trying to retrofit parking meters as charging stations. OEN has a web based tool that can help connect the grid with the internet as a mechanism for monitoring microgrids.[187]

TTGSC's comments support S.6. Additionally, TTGSC shared that it has already identified five hospital buildings in Los Angeles that could be used as technology demonstration sites for EPIC projects.[188]

Discussion and Staff Response

Staff acknowledges stakeholder support and has considered these comments in preparation of the investment plan. Staff modified S6.4 so that it includes research for developing data analytics, as requested by EGR.

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[185] Joint Environmental Parties comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_NRDC_and_the_Union_of_Concerned_Scientists_Comments_TN-67492.pdf

[186] EGR comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Electric_Grid_Research_comments_TN-67476.pdf

[187] OEN comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Oceans_Edge_Networks_Inc_Comment_Letter_TN-67472.pdf

[188] TTGSC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_TTG_Strategic_Consulting_comment_TN-67481.pdf

Cross-Cutting

Summary of Comments

Bart Goedhard of Goedhard Strategies[189] and Valley Energy Consulting (VEC)[190] provided comments in support of S10.1, which proposes to work through regional innovation clusters to provide small grants to early stage energy companies and entrepreneurs.

The Distributed Wind Energy Association (DWEA) supports S10.1, S10.2, and S10.3.[191]

Jessica Minasian,[192] John H. Glanville of Athenaeum Capital Partners LLC,[193] Zeph Phillips,[194] Muni-Fed Energy,[195] Peter Sproul of Classified Concepts,[196] April Dauzat of Classified Concepts,[197] Fusion Systems,[198] Maps.com staff,[199] Juan Perez of Maps.com,[200] Tina Sicre Miller of Maps.com,[201] Fred Long of Maps.com,[202] Lorraine Klotz of Maps.com,[203] Brianna Spears of

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[189] Goedhard Strategies comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-25_Goedhard_Strategies_Comments_TN-67273.pdf

[190] VEC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Valley_Energy_Consulting_Comment_TN-67401.pdf

[191] DWEA comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_DWEA_Comments_TN-67456.pdf

[192] Jessica Minasian comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-03_Jessica_Minasian_Letter_of_Support_TN-67497.pdf

[193] John Glanville comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-25_John_Glanville_of_Athenaeum_Capital_Partners_LLCs_Comments_TN-67274.pdf

[194] Zeph Phillips comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-30_Zeph_Phillips_Comments_TN-67394.pdf

[195] Muni-Fed Energy comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-25_Comment_from_Muni-FedEnergy_on_EPIC_Funding_TN-67323.pdf

[196] Peter Sproul comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_Peter_Sproul_of_Classified_Concepts_Comments_TN-67354.pdf

[197] April Dauzat comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_April_Dauzat_of_Classified_Concepts_Comments_TN-67353.pdf

[198] Fusion Systems comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-26_Fusion_Systems_North_America_Comments_TN-67299.pdf

[199]Maps.com staff comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-25_Maps_com_Staff_Letters_of_Support_TN-67301.pdf

[200] Juan Perez comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_Juan_Perez_Comments_TN-67389.pdf

[201] Tina Sicre comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_Tina_Sicre_Miller_of_Maps-dot-com_Comments_TN-67352.pdf

[202] Fred Long comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_Fred_Long_Maps-dot-com_Comment_TN-67365.pdf

[203] Lorraine Klotz comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-26_Public_Comment_by_Loraine_Klotz_on_EPIC_Funding_TN-67347.pdf

Maps.com,[204] Terry Karamaris of Maps.com,[205] Paul Chapman of Maps.com,[206] Robert M. Swayze of Economic Development Results LLC,[207] commented in support of S10.1. The participants also expressed support for the "development of a GIS-based Innovation Cluster management application."

The City of Aliso Viejo expressed interest in participating as a prototype for an energy innovation cluster. The city suggested that it will continue its work with Forma Companies and Technoplex, and is "willing to be a 'Beta test site' for best GIS practices in the conceptualization and management of an innovation cluster."[208]

The Joint Environmental Parties offered comments in support of the previously-funded Energy Innovations Small Grants (EISG) program. The Parties requested that the Energy Commission "consider establishing a similar small grants window under the EPIC program."[209]

The University of La Verne submitted comments in support of S10.2. The University of La Verne also supports having a leadership role in a water/energy innovation cluster.[210]

Watts Ease Inc. expressed support for strategic objective S10, and requested inclusion of "demand side technologies leveraging current smart grid infrastructures" in the funding categories identified in S10.1.[211]

Forma Companies (Forma) submitted comments regarding Geographic Information Systems (GIS) based innovation clusters for EPIC, as well as an innovation cluster management tool (ICMT) that Forma asserted "can be of use to the California Energy Commission in the management and success of the EPIC program." Additionally, Forma provided preliminary

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[204] Brianna Spears comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-26_Brianna_Spears_Comment_TN-67322.pdf

[205] Terry Keramaris comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-26-12_Comments_by_Terry_Keramaris_on_EPIC_Funding_TN-67330.pdf

[206] Paul Chapman comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-26_Paul_Chapman_Comments_TN-67303.pdf

[207] Robert M. Swayze comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-26_Robert_M_Swayze_of_Economic_Development_Results_LLC_Comments_TN-67305.pdf

[208] City of Aliso Viejo comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-27_City_of_Aliso_Viejo_comments_TN-67510.pdf

[209] Joint Environmental Parties comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_NRDC_and_the_Union_of_Concerned_Scientists_Comments_TN-67492.pdf

[210] University of La Verne comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_University_of_La_Verne_comments_TN-67509.pdf

[211] Watts Ease comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Watts_Ease_Inc_Comments_on_EPIC_Program_TN-67404.pdf

graphics from the California Community College System presenting its concepts for California renewable energy innovation clusters.[212]

Discussion and Staff Response

Staff acknowledges stakeholder support and has considered these comments in preparing the proposed investment plan. In response to comments from Watts Ease Inc, staff revised initiative S10.1 to include a research category for integrated demand-side resources optimized for smart grid applications.

Electric Vehicles

Summary of Comments

CALSTART expressed support for S9, but provided recommendations to broaden the scope of a few of the initiatives. CALSTART recommended that plug-in electric vehicles (PEVs) be amended to simply "plug-in vehicles" to allow the "use of plug-in hybrid and extended range electric vehicles as well as full battery electric vehicles." The party suggested that S9.3 be revised to broaden its technological scope so that it addresses other technological hurdles and areas for investments, including "improvements in the electric drive systems themselves and also improvements in the internal combustion engine portion of a plug-in hybrid system." CALSTART also recommended limited funding for roadmapping, research, and expert input.[213]

GridX suggested including a new initiative under Strategic Objective S.9 to provide for investments in the back-office IT infrastructure to support the electric vehicle (EV) market. GridX's proposed EV Data Clearinghouse initiative would provide for a common platform to exchange data between utilities and third party market participants such as EV owners or EV service providers. This initiative would allow for the EV service providers to offer a variety of billing and contract choices to customers.[214]

Coulomb Technologies (CT) comments generally support the EPIC investment plan. CT urges the Energy Commission to advance PEV infrastructure and use PEVs to improve operation and performance of California's power grid. CT encourages the Energy Commission to use Strategic Objective S.2 to provide opportunities for development of cost effective meters. In addition, CT supports using S.9 to advance plug in electric vehicle infrastructure.[215]

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[212]FORMA comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-10_Comments_and_Contribution_Concepts_to_EPIC_by_FORMA_Group_of_Companies_TN-67298.pdf

[213] CALSTART comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_CALSTARTs_Comments_TN-67490.pdf

[214] GridX comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_GridX_comments_TN-67485.pdf

[215] CT comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Coulomb_and_Charge_Point_Reply_Comments_TN-67460.pdf

The Joint Environmental Parties' comments strongly support EPIC research to expand electric vehicle infrastructure, "includ[ing] the lifecycle of batteries, the potential for 'second life' storage applications, research into charging technologies and approaches to integrate plug-in electric vehicles into the grid, and research into the potential for vehicle to grid storage."[216]

Discussion and Staff Response

Because of competing priorities facing IOU ratepayers in the short-term, staff believes that these topics may be better suited for consideration in a future EPIC investment plan or other sources of funding, such as AB 118. However, it is possible that aspects of these topics could be explored in S18.5. S18.5 proposes to provide a competitive solicitation for clean energy market analysis. The purpose of the analysis is to help identify and respond to gaps in assessments of the ratepayer price, cost, and impact of new tariffs and strategies to facilitate clean energy storage, demand response, electric vehicles, and renewable energy.

Other Comments Related to Applied Research

Summary of Comments

Pacific Gas and Electric (PG&E) commented that there appears to be a "gap in proposed research on basic transmission and distribution research," specifically mentioning the need to address issues with "aging grid infrastructure… and a lack of interoperability between new technologies." PG&E also commented that the scope of S7.1 should be broadened to address the need to "improve generation flexibility, such as reduced minimum generation and increased ramp rates for gas-fired generation and renewable dispatch."[217]

Athens Service Corporation (ASC) expressed general support for S3.2, S5.1, S9.4, and Strategic Objective S.10.[218]

Rita Norton & Associates LLC suggested that there is a need to investigate the rate cases to strengthen water conservation. This participant also emphasized the importance of considering social equity within and across generations. This participant suggested using EPIC funds for conducting research on these issues.[219]

The Scripps Institution of Oceanography generally supported the EPIC draft, but also suggested some specific changes and additions to the investment plan. The recommendations include: revision of S4.2 to include the work of the National Oceanic and Atmospheric Administration's

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[216] Joint Environmental Parties comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_NRDC_and_the_Union_of_Concerned_Scientists_Comments_TN-67492.pdf

[217] PG&E comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Pacific_Gas_and_Electric_Company_Comments_TN-67464.pdf

[218] ASC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_Athens_Services_Corporation_Comments_TN-67390.pdf

[219] Rita Norton comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Rita_Norton_and_Associates_LLC_Comments_TN-67393.pdf

(NOAA) Earth System Research Laboratory's successful 2-year project with the Department of Energy (U.S. DOE); revision of S5.3 to include NOAA's Hydrometeorology Testbed (HMT), SIO, atmospheric rivers, aerosols, the California Water Service Company; and minor clarifying revisions to S5.4.[220]

Nautical Torque Technology [NTT] requested that the investment plan be revised to include a "miscellaneous" category to provide funding for prototype development.[221]

Discussion and Staff Response

Staff has noted the research recommended by Scripps and included a reference to the research conducted by NOAA. Staff revised S5.3 to reflect comments from the Scripps Institute of Oceanography.

In response to PG&E, research on improving grid infrastructure and addressing interoperability issues between new technologies is within the scope of this investment plan, and is covered under Strategic Objectives S.6 and S.7. Research on improving generation flexibility is included within the scope of initiative Strategic Objective S13.3. In addition, Strategic Objectives 6, 7 and 8, will be implemented in close collaboration with the utilities to identify the needed transmission and distribution to capture opportunities for IOU ratepayer benefits.

In response to NTT's comments, staff believes that a "miscellaneous" category of funding would not be consistent with the level of specificity required by the CPUC EPIC decision. Innovative energy technologies may be eligible for funding under the innovation cluster small grant program (S10.1).

Technology Demonstration and Deployment

The Technology Demonstration and Deployment chapter of the proposed investment plan describes initiatives on the following topics: energy efficiency and demand-side management; grid integration of intermittent renewable energy resources; and energy smart communities. Stakeholders provided the following comments specific to these initiatives.

Energy Efficiency and Demand-side Management

Summary of Comments

California Lithium Battery's (CalBattery)[222] and the University of La Verne's[223] comments supported S11.1.

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[220] Scripps Institution comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Scripps_Institution_of_Oceanography_Comment_Letter_TN-67457.pdf

[221] NTT comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-26_Comments_from_Nautical_Torque_Technology_re_EPIC_Funding_TN-67344.pdf

CCAN recommended that the Energy Commission expand the focus of S11.1 to include "research of on-farm practices that provide water and energy use savings through changes in management and emerging technologies such as soil moisture sensors."[224]

Ventures Resources, LLC submitted comments in support of S11.1.[225]

Discussion and Staff Response

Staff acknowledges stakeholder support and has considered these comments in preparation of the proposed investment plan. Staff will reconsider CCAN's suggestion to revise initiative S11.1 in the next investment plan, pending completion of a water-energy nexus roadmap to determine research needs and feasibility.

Demonstration of Strategies to Enhance Grid Integration of Intermittent Renewable Energy

Summary of Comments

The Glendale Memorial Hospital and Health Center supports S13.2.[226]

AGIOSTAT Government Services Inc. provided comments asserting that there is an increasing need to look at utility-scale applications of smart grid, such as substation automation, distribution automation, advanced metering infrastructure (AMI) backhaul, remote monitoring, workforce mobility, and communications network redundancy. AGIOSTAT recommended that satellite communications should be advanced through technical field deployment and demonstration as a viable solution in order to bring smart grid functionality and all of its benefits to sparsely populated geographies. AGIOSTAT additionally stated that, as a non-terrestrial-based network, satellite communications may be the only solution to keep the grid connected and/or bring it back online rapidly in cases of natural (or manmade) disasters.[227]

BirdsVision suggested an amendment of S12.1 to include "technologies that enable mitigation of environmental risks." BirdsVision also proposed a new TD&D initiative for technologies and strategies to reduce wind energy impacts on birds.[228]

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[222] CalBattery comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_CalBattery_Public_Comments_TN-67443.pdf

[223] University of La Verne comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_University_of_La_Verne_comments_TN-67509.pdf

[224] CCAN comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Climate_and_Agriculture_Network_Comments_TN-67455.pdf

[225]Venture Resources comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Venture_Resources_LLCs_Comments_TN-67480.pdf

[226] *Id.*

[227] AGIOSTAT comments http://energy.ca.gov/research/epic/documents/ (not posted online)

[228] BirdsVision comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_BirdsVisions_Comments_TN-67465.pdf

The Glendale Memorial Hospital and Health Center supports S12.2.[229]

CalBattery provided comments in support of S12.3.[230]

Gridco Systems (Gridco) provided comments in support of S12.3, and recommended that the scope of the initiative be expanded to include power electronic-based technologies.[231]

Discussion and Staff Response

Research on utility-scale applications including distribution automation, monitoring, and communications using smart grid technologies are within the scope of this investment plan under Strategic Objective S.6. Staff acknowledges the comment regarding satellite communications for the grid, and has considered this in preparing the proposed investment plan.

Staff acknowledges the comments from BirdsVision. To the extent that technologies exist to mitigate the impacts of wind energy, staff would like to see these tested and verified at pilot scale in California before offering funding for commercial deployment. Language was added to initiative S5.2 to expand the scope of the initiative to include this activity.

Staff acknowledges stakeholder support for initiative S12.3, but has narrowed the scope of this initiative to avoid duplicating work being proposed by the investor owned utilities. Batteries and power electronics will both be eligible as component technologies in energy-smart community demonstrations (S.13).

Demonstration of Bioenergy Technologies

Summary of Comments

The Hambro Group "is supportive of working with [the Energy Commission] and the Tri-Agency Economic Development Authority in order to develop a new energy project… in Del Norte County which would utilize biomass from [that] area."[232]

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[229] GMH comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_Glendale_Memorial_Hospital_Letter_of_Support_and_Request_to_be_Included_in_the_Potential_Grant_Funding_Cycle_TN-67440.pdf

[230] CalBattery comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_CalBattery_Public_Comments_TN-67443.pdf

[231] Gridco Systems comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-05_Gridco_Systems_Comment_TN_67543.pdf

[232] Hambro Group comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Hambro_Group_Comment_Letter_TN-67439.pdf

The Tri-Agency Economic Development Authority (Tri-Agency) supports S12.1 and S14.1, and would like to take an active role in each of these funding initiatives. [233]

The Delta Diablo Sanitation District (DDSD) submitted comments on behalf of the Bay Area Biosolids to Energy (BAB2E) Coalition. In its comments, DDSD supports S12.1 and suggests that the initiative be amended to include funding for "commercial scale facilities using technologies and processes successfully demonstrated at a pilot or pre-commercial scale." [234]

CBEA offered support for advanced biomass and fuel handling systems projects as identified in S12.1. CBEA "recommends particular emphasis is placed on projects that 1) have short-term benefits (less than 8 years) and 2) provide tangible and cost-effective benefits to the existing fleet of operational and near operational facilities." CBEA suggests that the "latter point could be demonstrated by working with or partnering with existing fuel suppliers and facility operators." [235]

The Joint Bioenergy Parties,[236] CH4 Energy,[237] and the ABC[238] made several suggestions to revise the Technology Demonstration and Deployment section of the draft investment plan. The participants argued that 20 percent is not sufficient funding for bioenergy and that the CPUC decision identified a "minimum of 20%." The participants also suggest that the majority of TD&D funding should be used for a "capital grant program to facilitate bioenergy project deployment. The grant program should be coordinated closely with implementation of SB 1122 to maximize benefits to ratepayers and facilitate deployment of a broad array of bioenergy technologies."

Schatz Energy Research Center (SERC) expressed support for S12.1. [239]

ASC expressed support for the twenty percent allocation for bioenergy activities, and also expressed support for S12.1. [240]

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[233] Tri-Agency comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Tri-Agency_Economic_Development_Authority_Comments_TN-67441.pdf

[234] DDSD comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Delta_Diablo_Sanitation_Districts_Comments_TN-67406.pdf

[235] CBEA comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Biomass_Energy_Alliance_Comments_TN-67471.pdf

[236] Joint Bioenergy Parties comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Joint_Bioenergy_Parties_Comments_TN-67459.pdf

[237] CH4 Energy comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_CH4_Energy_Comment_TN-67535.pdf

[238] ABC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_American_Biogas_Council_Comment_TN-67534.pdf

[239] SERC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Schatz_Energy_Research_Centers_Comments_TN-67487.pdf

WM's comments were supportive of S12.1, but requested that it not only support pollution control technologies, but also provide supplemental funding to keep "biogas to energy projects solvent and prevent a return to flaring and waste of available biogas resources."[241]

The Joint Environmental Parties expressed support for "demonstrating innovative and sustainable bioenergy technologies and deployment systems" as identified in S12.1. The Parties also support the allocation of 20 percent of 2012-2014 technology demonstration and deployments funds toward bioenergy, but remind the Commission that this amount can be revisited in the future.[242]

The ABC[243] and CH4 Energy[244] "strongly support the emphasis on advanced pollution controls and on community-scale, integrated systems" citing that this emphasis is "consistent with SB 1122 and the Governor's signing message on that legislation."

PFT recommended that S12.1 be revised to reflect the substantial forest sector generation potential in specific bioenergy allocations.[245]

Discussion and Staff Response

Staff acknowledges stakeholder support for the activities discussed above and has incorporated these comments in development of this proposed investment plan. In response to DDSD's comments, staff added language to S13.1 to clarify that technologies, processes, and strategies successfully demonstrated at pilot scale are eligible to apply for funding.

Staff acknowledges CBEA's comments. The proposed investment plan focuses on projects that can provide near-term benefits. Demonstration of advanced biomass handling and delivery systems implicitly requires the involvement of an operational biopower facility given the requirement that demonstrations lead to clean energy generation. No explicit requirement has been included to limit to existing facilities.

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[240] ASC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_Athens_Services_Corporation_Comments_TN-67390.pdf

[241] Waste Management comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Waste_Management_Comments_TN-67445.pdf

[242] Joint Environmental Parties comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_NRDC_and_the_Union_of_Concerned_Scientists_Comments_TN-67492.pdf

[243] ABC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_American_Biogas_Council_Comment_TN-67534.pdf

[244] CH4 Energy comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_CH4_Energy_Comment_TN-67535.pdf

[245] Pacific Forest Trust comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Pacific_Forest_Trust_Comments_TN-67447.pdf

As correctly stated in many of the comments, the bioenergy set-aside is a minimum of 20 percent of the TD&D funds. Energy Commission staff have developed Initiative S13.1 to focus on spending $27 million during the first investment plan cycle. This represents 20 percent. Staff will actively manage funding to bioenergy TD&D projects, and if necessary, the Energy Commission has the ability to request that the CPUC re-allocate funds from other activities in the investment plan. The 20 percent set-aside will be re-evaluated during the development of the second investment plan.

Biogas-to-biomethane technology research and development will be funded through other Energy Commission programs. To avoid duplication, research on this topic was not included in this EPIC investment plan. Staff will review funding eligibility during the development of the second investment plan.

Demonstration of Marine and Hydrokinetic Technologies

Summary of Comments

CalBattery expressed support of the comments provided by the California State Lands Commission and the California Ocean Protection Council, and asserts that CalBattery's technology could provide valuable storage for offshore wind and wave energy technologies.[246]

C.P. van Dam of the University of California, Davis provided comments in support of S4.2, S4.4, S5.3, and S10.2. Professor van Dam suggested that "EPIC program funding levels should be programmed as an appropriate match, or cost share, for that of the U.S. Department of Energy, which is considering $50.6 million in funding a major offshore wind demonstration project offshore of Point Conception." Lastly, Professor van Dam expressed support of the Energy Commission's reference to work with the Department of Defense (U.S. DOD) on the EPIC program.[247]

William Toman commented that EPIC program funding levels could be set up as an appropriate matching, or cost share of the U.S, Department of Energy's investment in offshore wind project funding. [248] Mr. Toman also asserted that S13.2 should be applicable to the application of offshore wind energy projects in military facilities.[249]

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[246]CalBattery comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_CalBattery_Public_Comments_TN-67443.pdf

[247] CP van Dam comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_UC_Davis_Comments_on_the_Marine_Renewable_Resources_TN-67502.pdf

[248] William Toman comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_William_Toman_comment_TN-67505.pdf

[249] *Id.*

Lieutenant Governor Gavin Newsom,[250] OREC,[251] and William F. Lyte of Protean North America[252] expressed support for S13.2 in the technology demonstration and deployment section of the draft investment plan. Lieutenant Governor Newsom also discussed ongoing military efforts to support marine energy technologies as opportunities to be leveraged.[253]

Discussion and Staff Response

Staff acknowledges stakeholder support for the activities mentioned above and has considered these comments in developing the proposed investment plan. Staff is not proposing demonstration of offshore wind or wave energy conversion technologies in this investment plan. Instead, staff proposes to conduct applied research to advise roadmapping efforts and identify the technical, economic, and environmental barriers to the development of offshore renewable resources.

Demonstration of Electric Vehicles

Summary of Comments

The Governor's Office shared its Draft *2012 ZEV Action Plan A Roadmap toward 1.5 Million Zero-emission Vehicles on California Roadways by 2025,* released in September 2012.[254] The action plan was developed by the interagency working group led by the Governor's Office, which includes the following state agencies: California Air Resources Board (CARB); California Energy Commission (Energy Commission); California Public Utilities Commission (CPUC);California Independent System Operator (California ISO); California Department of Transportation (CalTrans); Department of General Services (DGS), including the Division of the State Architect (DSA); Building Standards Commission (BSC); California Housing and Community Development Department (HCD); Labor and Workforce Development Agency, including the Employment Training Panel; and the California Department of Food and Agriculture, Division of Measurement Standards. The action plan builds off of work that these agencies are already doing, as well as input from outside stakeholders, including the California Plug-in Electric Vehicle Collaborative (PEVC) and the California Fuel Cell Partnership (CaFCP).

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[250]Lieutenant Governor Gavin Newsom comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_Lieutenant_Governor_Gavin_Newsom_comments%20on_Marine_Renewable_Resources_TN-67508.pdf

[251] OREC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Ocean_Renewable_Energy_Coalition_Comments_TN-67400%20.pdf

[252] William F. Lyte comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-23_Protean_North_America_Inc_Comment_TN-67261.pdf

[253]Lieutenant Governor Gavin Newsom comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_Lieutenant_Governor_Gavin_Newsom_comments%20on_Marine_Renewable_Resources_TN-67508.pdf

[254]Governor's Office comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-24_Governors_2012_ZEV_Action_Plan_TN-67265.pdf

TransPower's comments offered support for Strategic Objective S.9. TransPower recommended that the investment plan be revised to "add significant demonstration programs focused on transportation with ZE vehicles, and particularly focus on port goods movement and inner city mitigation aspects that can be addressed best by replacing other heavy duty transport." TransPower's recommendation specifically suggests "expanded funding for development and deployment of large battery-electric vehicles."[255]

CALSTART strongly supports S13.3, but sees vehicle-to-grid demonstrations and second-use vehicle battery applications as two separate needs.[256]

Digital Geographic Research Corporation (DGRC) provided comments in support of the allocation of funding for electric truck demonstration projects and use of GPS technologies to monitor and link renewable energy projects.[257]

Total Transportation Systems, Inc (TTSI) supports the draft investment plan but strongly encourages the Energy Commission to specify in greater detail its collective commitment to fund and demonstrate zero emission trucks throughout the state. TTSI notes that the current draft of the investment plan contains broad references to electric transportation, and should put specific language on opportunities for electric trucks.[258]

Ventures Resources, LLC submitted comments in support of S13.3.[259]

Discussion and Staff Response

Staff acknowledges stakeholder support for the activities mentioned above and has considered these comments in the development of the proposed investment plan. Because of competing priorities facing IOU ratepayers in the short-term, staff believes that many of these topics may be better suited for consideration in a future EPIC investment plan or more suitable sources of funding, such as AB 118.

In response to comments submitted by DGRC and TTSI, staff generally considers the term "electric vehicles" to be inclusive of plug-in hybrid and full electric medium- and heavy-duty

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[255] TransPower comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_TransPowers_Comments_TN-67467.pdf

[256] CALSTART comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_CALSTARTs_Comments_TN-67490.pdf

[257] DGRC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Digital_Geographic_Research_Corporation_comments_TN-67470.pdf

[258] TTSI comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Total_Transportation_Systems_Inc_Comments_TN-67468.pdf

[259]Venture Resources comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Venture_Resources_LLCs_Comments_TN-67480.pdf

vehicles. However, staff believes that AB 118 would be a more suitable source of funding for medium- and heavy-duty electric vehicle demonstrations.

Other Comments Related to Technology Demonstration and Deployment

Summary of Comments

The Joint Environmental Parties expressed strong general support for the technology demonstration and deployment strategies in the draft investment plan, but also "urge the Commission to focus on defining current operational challenges and deficits, rather than choosing technology winners at the outset to accomplish specific strategic initiatives in the draft plan."[260]

Energy Solutions requested clarification to better identify the "point along the commercialization curve" at which projects should apply for the IOU technology demonstration and deployment efforts rather than the Energy Commission's EPIC-funded initiatives.[261]

The Silicon Valley Leadership Group (SVLG) provided comments in support of Republic Solar Highways' comments regarding the use of EPIC funds to assist in the development of solar highways as a demonstration project.[262]

Discussion and Staff Response

Staff acknowledges stakeholder support for the activities mentioned above and has considered these comments in preparation of the proposed investment plan.

With respect to comments from the Joint Environmental Parties, the proposed investment plan includes gap analyses and roadmapping efforts within a variety of initiatives under Strategic Objectives S.10 Leverage California's Regional Innovation Clusters to Accelerate the Deployment of Early-Stage Clean Energy Technologies and Companies and S.18 Guide EPIC Investments Through Effective Market Assessment, Program Evaluation, and Stakeholder Outreach.

Market Facilitation

The Market Facilitation chapter of the proposed investment plan describes initiatives on the following topics: regulatory streamlining and permit assistance; workforce development; and

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[260] Joint Environmental Parties comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_NRDC_and_the_Union_of_Concerned_Scientists_Comments_TN-67492.pdf

[261] Energy Solutions comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Energy_Solutions_Comments_TN-67448.pdf

[262] SVLG comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-09-17_Silicon_Valley_Leadership_Group_Letter_of_Support_re_Republic_Solar_Highways_Project_TN-67198.pdf.pdf

program tracking and market research. Stakeholders provided the following comments specific to these initiatives.

Regulatory Assistance and Permit Streamlining

Summary of Comments

PG&E recommended a "broader perspective on how to modify permitting processes for a number of technologies and initiatives, not just renewables, and that such streamlining could yield benefits for our customers by reducing the time (and cost) to permit a variety of facilities." PG&E specifically cited issues with permitting chargers for electric vehicles as a potential topic for inclusion.[263]

CEERT provided comments in support of Strategic Objective 14, and generally supports funding to address "barriers to permitting and therefore facilitate renewable energy projects while minimizing impacts on protected species." CEERT also commented in support of S14.5, which proposes to provide funding for the development and implementation of the General Plan Guidelines. CEEERT suggests that this initiative "should be prioritized and fully funded to ensure that preventable barriers to development do not impede the adoption of renewable energy."[264]

DWEA offered comments in support of S14.2, S14.3, S14.4, S14.5, and S14.6, as these initiatives directly address barriers to permitting. DWEA has developed a model ordinance for small wind systems, and offers to use this as a starting point for further work with local governments. DWEA is also "promoting the establishment of a permitting assistance program at the U.S. DOE analogous to the cited activities in the SunShot PV program."[265]

In its comments, the California Farm Bureau Federation (Farm Bureau) supported strategic objectives that recognize the importance of local control over land use decisions. Specifically, Farm Bureau is supportive of S14.1 to increase greater coordination between the electric infrastructure and land-use planning and policies. Farm Bureau is also supportive of S14.2-S14.5, and commented that these initiatives are necessary to broaden the scope of resources.[266]

The Joint Bioenergy Parties,[267] CH4 Energy,[268] and the ABC[269] recommended "adding a separate objective of 'Interconnection Streamlining and Facilitation.'" The recommendation specifically

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[263]PG&E comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Pacific_Gas_and_Electric_Company_Comments_TN-67464.pdf

[264] CEERT comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_CEERT_Comments_TN-67469.pdf

[265] DWEA comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_DWEA_Comments_TN-67456.pdf

[266] CFBF comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Farm_Bureau-Federations_Comments_TN-67486.pdf

[267] Joint Bioenergy Parties comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Joint_Bioenergy_Parties_Comments_TN-67459.pdf

"urge[s] the Commission to add a strategic objective to collaborate with the CPUC, IOUs and distributed energy developers to develop lower cost interconnection solutions and make interconnection maps, availability, costs and permitting timelines transparent and to provide certainty to developers throughout the project development process."

The San Gabriel Valley Economic Partnership (the Partnership) expressed support for EPIC, particularly as it pertains to water-related renewable energy technologies. The Partnership is also very supportive of the La Vernon Water Institute and expressed interest in assisting the Energy Commission in "collaboration with local jurisdictions and stakeholder groups in IOU territories to establish strategies for enhancing current regulatory assistance and permit streamlining efforts."[270]

ASC[271] and the University of La Verne[272] are generally supportive of Strategic Objective S.14 and its efforts to strengthen the clean energy workforce.

Defenders of Wildlife and the Sierra Club strongly encourage the Energy Commission to consult with the Governor's Office of Planning and Research (OPR) to better understand how to design a grant program which would be accessible and be utilized by local government to meet the goals of S14.[273]

David Hull and Associates,[274] Ocean Renewable Power Company,[275] Ocean Wave Energy Company,[276] Sound & Sea Technology, Inc.,[277] Verdant Power,[278] the Center for Coastal Marine

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[268] CH4 Energy comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_CH4_Energy_Comment_TN-67535.pdf
[269] ABC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_American_Biogas_Council_Comment_TN-67534.pdf
[270] SGVEP comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-04_San_Gabriel_Valley_Economic_Partnerships_Comments_TN-67511.pdf
[271] ASC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_Athens_Services_Corporation_Comments_TN-67390.pdf
[272] University of La Verne comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_University_of_La_Verne_comments_TN-67509.pdf
[273] Defenders of Wildlife and Sierra Club comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Defenders_of_Wildlife_and_Sierra_Club_Comments_TN-67458.pdf
[274] David Hull and Associates comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_David_Hull_and_Associates_Comments_TN-67397.pdf
[275] Ocean Renewable Power Company comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Ocean_Renewable_Power_Company_Comments_TN-67399.pdf
[276]Ocean Wave Energy Company comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-29_Ocean_Wave_Energy_Company_Comments_TN-67391.pdf

Sciences at Cal Poly,[279] Ecomerit Technologies, LLC,[280] PFT,[281] and Dresser-Rand Company[282] provided comments in support of EPIC activities related to wave and offshore wind, specifically expressing support for regulatory assistance and permit streamlining activities under Strategic Objective 14 of the market facilitation section of the draft investment plan.

Discussion and Staff Response

Staff acknowledges stakeholder support and has considered these comments in the development of the proposed investment plan.

Energy Commission staff agrees with PG&E that market facilitation activities that reduce time and uncertainty for permitting clean energy projects will lower costs for ratepayers. Initiatives proposed in S16.1 through S16.6 do not limit investment to certain clean energy technologies. Investment proposals that include strategies to improve permitting for PEV charging infrastructure would be within the scope of these initiatives.

Staff shares the same urgency as CEERT regarding S16.5. Staff anticipates that impediments to clean energy development can be reduced once state planning guidelines for clean energy development are completed.

Staff appreciates DWEA describing their current efforts to improve permitting for small wind energy systems. As described in Chapter 5 of the investment plan, the Energy Commission will avoid duplication of similar investments while leveraging efforts to overcome permitting barriers, including efforts being taken by DWEA.

Regarding comments from the Farm Bureau, staff recognizes that local control of land use is important to advancing clean energy goals. Because of their authority to regulate most land uses, local government activities in planning and zoning are critical components to achieving short and long term clean energy goals.

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[277] Sound & Sea Technology comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Wave_and_Offshore_Wind_Comments_TN-67446.pdf

[278] Verdant Power comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Verdant_Power_Comments_TN-67450.pdf

[279] Center for Coastal Marine Sciences comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Center_for_Coastal_Marine_Sciences_at_Cal_Poly_comments_TN-67479.pdf

[280]Ecomerit Technologies comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Ecomerit_Technologies_LLCs_Comments_TN-67483.pdf

[281] PFT comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Pacific_Forest_Trust_Comments_TN-67447.pdf

[282] Dresser-Rand Company comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Dresser-Rand_Company_Comments_TN-67392.pdf

Initiative S16.1 will include activities that increase coordination of IOU infrastructure and land use planning, which the Farm Bureau supports. Staff will also ensure that a grid infrastructure perspective is taken in all initiatives that work to improve local regulatory processes.

Regarding comments from the Joint Bioenergy Parties, through S16.1 pilot demonstrations will be encouraged to test and showcase processes that improve interconnection. Staff encourages the Joint Bioenergy Parties to work with the S16.1 pilot projects to develop and test innovative interconnection processes. Initiative S10.3 may also address this issue through the development of research roadmaps.

For initiative S16.5, the Energy Commission would hold a competitive request for proposal process to select a contractor to work with OPR. The contractor will work with OPR to include clean energy technologies in the general plan guidelines and ensure local governments have the tools to implement the guidelines in IOU territories.

Workforce Development

Summary of Comments

The California Workforce Investment Board (CWIB) expressed support for the Energy Commission's commitment to workforce development planning, and encourages the Energy Commission to build on existing workforce programs and institutions. CWIB pointed out that the Division of Apprenticeship Standards (DAS) has developed the best known workforce training model with a record of ensuring that training is industry-relevant, and leads directly to employment (see S.15). The CWIB and other partner workforce agencies have prioritized supporting and expanding the DAS programs, and they look forward to collaborating with the Energy Commission to help guide the direction of the EPIC program.[283]

The California Center for Sustainable Energy (CCSE) expressed general support for S15.1 and S15.2. Moreover, CCSE noted that it is already working with other groups to create a clean energy workforce needs assessment and to develop a workforce training center at La Kretz Innovation Campus. CCSE encourages the use of EPIC funds to assist in the development of La Kretz Innovation Campus, and offers that it can be used as a model to promote statewide development of similar centers.[284] CCSE submitted supplemental comments in support of conducting a workforce needs assessment. CCSE asserted that such an assessment would provide valuable information to assist in creating training and job opportunities in at-risk and low or moderate income communities.[285]

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[283] CWIB comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Workforce_Investment_Board_Comment_Letter_TN-67599.pdf

[284]CCSE comments www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Center_for_Sustainable_Energys_Comments-TN-67493.pdf

[285] CCSE supplemental comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-05_Center_for_Sustainable_Energy_Comment_TN-67540.pdf

In its comments, PG&E suggested that there is a need to address "workforce transition issues."[286]

The Division of Apprenticeship Standards (DAS) expressed support for inclusion of workforce development activities within the EPIC investment plan. DAS offered suggested revisions to the initiatives in Strategic Objective S15. DAS requested that the "proposed funding recipients specifically name both the state's Division of Apprenticeship Standards (DAS) and individual DAS-approved 'registered apprenticeship program sponsors' who are the actual training providers." DAS suggested that the Energy Commission's EPIC investments could be used to "support new, clean energy specific curriculum development, train-the-trainer initiatives, and collaborations with other state agencies and industry partners." One example that DAS provided would use EPIC funds to leverage "DAS's plan to develop a collaboration with the IOUs to align training and certifications in energy efficiency sectors." Lastly, DAS supports "Donald Vial Center's August 17th, 2012 recommendation for the creation of a panel of workforce agencies and experts to oversee the development of the workforce portions of EPIC."[287]

The UC Berkeley Donald Vial Center on Employment in the Green Economy (Donald Vial Center) was supportive of the inclusion of workforce development activities in the EPIC investment plan. The participant offered several recommendations for revising this section of the plan. The participant recommended that S15.1 be removed from the investment plan, since such an assessment only needs to be conducted every five years, and U.C. Berkeley completed an extensive needs assessment in 2010. These comments provided an alternative proposal that would include funds for research to examine the costs and benefits of worker skill standards and contractor pre-qualifications; methods to incorporate early workforce planning into the commercialization process in order to avoid market confusion and poor quality installations; the impact of state energy policies on job quality and job access, and research and data collection on actual hiring practices, compensation, employee turnover and training. The participant suggested the new initiative receive $500,000 in funding per year.

Donald Vial Center also provided some additional information for S15.2, encouraging the Energy Commission to collaborate with both the Division of Apprenticeship Standards and the Employment Training Panel. The participant also recommended that this initiative be expanded in scope, since it currently only covers non-residential construction trades. Donald Vial Center recommended that the investment plan include proposals that would create plans to incorporate curriculum upgrading and skills certifications. The participant recommended that this initiative receive $2 million per year in funding.

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[286] PG&E comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Pacific_Gas_and_Electric_Company_Comments_TN-67464.pdf

[287] DAS comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Division_of_Apprenticeship_Standards_comments_TN-67475.pdf

Donald Vial Center recommended that the clean energy job section be removed from the web portal identified in S16.1, suggesting that such a function should be completed by a workforce agency to avoid possible duplication.

Donald Vial Center also recommended that EPIC provide funds for a university-based Center on the Clean Energy Workforce modeled after the technology centers that the Energy Commission has funded in the past, like the UC Davis Advanced Lighting Center. The participant recommended that $300,000 per year be allowed for this program.[288]

Workforce Incubator offered comments requesting enhancements in the investment plan to (1) develop a comprehensive workforce for advancing smart grid and demand-side energy efficiency as an integrated system, (2) utilize the capacity of the California Community College and State University Systems and "[l]ink labor union programs into these pathways to offer lifelong learning and career progression lattices throughout the state, (3) "[d]rive education and training programs through research into electric industry workforce needs, including utilities, manufacturers, architectural and engineering firms, systems integrators, ESCOs, and design-build contractors."[289]

The Southern California Regional Transit Training Consortium (SCRTTC) suggested leveraging the use of existing workforce development "resources" in order to help meet the range of activities outlined in the draft investment plan. Multiple transit agencies in the Southern California region partnered with the community colleges and private industry to form the SCRTTC to "lead the development of a national transit training learning model." The SCRTTC commented that it has become nationally recognized for its training program.[290]

Larry McLaughlin suggested focusing workforce development "on technical, market, and regulatory training and information that facilitates the deployment and commercialization of specific technologies being developed under the EPIC program." Mr. McLaughlin suggested that "[w]here possible, the workforce development that is supported by EPIC should build on a preexisting skill base within the related technical workforce, or in the case of market-oriented or regulatory training, the appropriate business or government background." Lastly, Mr. McLaughlin encouraged the Energy Commission to include stakeholders during the planning

[288]Donald Vial Center comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Donald_Vial_Center_on_Employment_in_the_Green_Economy_at_UC_Berkeley_TN-67484.pdf
[289]Workforce Incubator comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Workforce_Incubator_Comments_TN-67396%20.pdf
[290]SCRTTC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-24_Southern_California_Regional_Transit_Training_Consortium_Comment_TN-67272.pdf

and implementation process for the programs that will be carried out as a result of market facilitation initiatives.[291]

Nicole Woolsey Biggart of the Energy Efficiency Center at UC Davis recommended that the scope of the workforce development initiatives should be "expanded to include specific objectives supporting university educational programs (research training, seminars, courses, etc.) that will develop future scientists and foster the business expertise needed for future energy efficiency innovation."[292]

CSUNBD suggested that its Ocean Studies Institute could contribute a strong knowledge base to facilitate workforce development in clean energy (S15).[293]

The National Asian American Coalition expressed strong support for S15.1 and 15.2.[294]

ASC expressed general support for Strategic Objective S.15.[295]

David Hull and Associates,[296] Ocean Renewable Power Company,[297] Ocean Wave Energy Company,[298] Sound & Sea Technology, Inc.,[299] Verdant Power,[300] Ecomerit Technologies,

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[291] Larry McLaughlin comments http://www.energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-16_Comments_by_Larry_McLaughlin_on_EPIC_Workshop_TN-67350.pdf

[292]Nicole Woolsey Biggart comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Nicole_Woolsey_Biggart_of_UC_Davis_Comments_TN-67506.pdf

[293] CSU Northridge Biology Department comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_State_University_Northridge_Biology_Department_Comment_Letter_TN-67466.pdf

[294]National Asian American Coalition comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_National_Asian_American_Coalitions_Comments_TN-67474.pdf

[295] ASC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_Athens_Services_Corporation_Comments_TN-67390.pdf

[296] David Hull and Associates comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_David_Hull_and_Associates_Comments_TN-67397.pdf

[297] Ocean Renewable Power Company comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Ocean_Renewable_Power_Company_Comments_TN-67399.pdf

[298]Ocean Wave Energy Company comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-29_Ocean_Wave_Energy_Company_Comments_TN-67391.pdf

[299] Sound & Sea Technology comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Wave_and_Offshore_Wind_Comments_TN-67446.pdf

[300] Verdant Power comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Verdant_Power_Comments_TN-67450.pdf

LLC,[301] and Dresser-Rand Company[302] provided comments in support of EPIC activities related to wave and offshore wind, specifically expressing support for workforce development activities under Strategic Objective 15 of the market facilitation section of the draft investment plan.

The California State University Council on Ocean Affairs, Science and Technology (COAST) [303] and the Coastal Marine Institute at San Diego State University[304] expressed support for Strategic Objective S.15 in the market facilitation section of the draft investment plan.

CALMITSAC expressed support for Strategic Objective S.15 in the market facilitation section of the draft investment plan. [305]

Discussion and Staff Response

Staff acknowledges stakeholder support for the workforce development activities mentioned above and has incorporated these comments in the development of the proposed investment plan. The comments received from Donald Vial Center, DAS, CCSE, Workforce Incubator, SCRTTC, Larry McLaughlin, Nicole Woolsey Biggart, CSUNBD, and The National Asian American Coalition were beneficial in amending and clarifying the workforce initiatives.

In response to comments received from the Donald Vial Center and CCSE regarding the potential duplication of existing efforts through conducting a workforce needs assessment, staff has removed S15.1 from the proposed investment plan. Staff suggests reevaluating whether EPIC funds are needed for a workforce assessment in future investment plans.

In response to comments from the Donald Vial Center, staff also removed the clean energy jobs section of the web portal identified in S18.1, and added language that will provide links to workforce agencies and to the investor-owned utilities' Energy Training Centers under the Workforce Development and Education section of the web portal.

Staff intends to seek input from workforce agencies and other stakeholders when developing competitive bid solicitations for the workforce development initiatives.

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[301]Ecomerit Technologies comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Ecomerit_Technologies_LLCs_Comments_TN-67483.pdf

[302] Dresser-Rand Company comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Dresser-Rand_Company_Comments_TN-67392.pdf

[303] CSU COAST comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02-CSU_COAST_Comments_TN-67454.pdf

[304] Coastal Marine Institute at SDSU comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_CMIs_Comments_TN-67503.pdf

[305] CALMITSAC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Marine_and_Intermodal_Transportation_System_Advisory_Council_Comments_TN-67452r.pdf

Program Tracking and Market Research

Summary of Comments

CALSTART suggested that EPIC funding be used for implementing new roadmapping efforts.[306]

The California Geothermal Energy Collaborative (CGEC) of UC Davis included a draft proposed funding initiative to include under the market research category. The proposed initiative is a geothermal heat pump barrier and implementation study that would help establish a standardized approach for qualifying designers and installers of geothermal heat pump systems.[307]

The California Energy Efficiency Industry Council (Efficiency Council) expressed support for information sharing among stakeholders through a web portal, central database, or other means, to increase collaboration and further innovation. Efficiency Council also supports the market research objectives in the Market Facilitation area (S.16.3, S.16.4, S.16.5), but suggests that these be expanded to include "a study that identifies gaps or needs within the energy efficiency market, starting at the system level, then drilling down into needs for specific technologies or approaches." Efficiency Council recommended that EPIC provide market opportunity information to help companies with innovative technologies identify the best market segments for targeting RD&D or later-stage commercialization efforts. The participant suggests that this information helps companies increase their chance of success by helping them attract investments and better target limited resources."[308]

In its comments, FORMA requested market facilitation funding for its Innovation Cluster Management Tool, which would allow researchers within the state to collaborate with each other, share data files, and access information on available funding and markets. FORMA suggested that the tool could also be used to provide technical support for EPIC projects.[309]

CCAN recommended developing a competitive grants program to achieve S16.2.[310]

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[306]CALSTART comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_CALSTARTs_Comments_TN-67490.pdf

[307] CGEC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-27_UC_Davis_Comments_TN-67473.pdf

[308]Efficiency Council comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Energy_Efficiency_Industry_Councils_Comments_TN-67462.pdf

[309] FORMA comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-10_Comments_and_Contribution_Concepts_to_EPIC_by_FORMA_Group_of_Companies_TN-67298.pdf

[310] CCAN comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Climate_and_Agriculture_Network_Comments_TN-67455.pdf

PFT's comments expressed general support for S.16. However, PFT requested that the Energy Commission consider revising S.3, S.5 or S.16 to provide clear guidance for environmental assessments of biomass sustainability.[311]

Discussion and Staff Response

Staff appreciates comments in support of the program tracking and market research initiatives discussed above and staff has considered these comments in preparation of the proposed investment plan. The initiatives in the program tracking and market research section of the proposed investment plan allow for a wide range of projects. Staff will select projects on a competitive basis.

Regarding CALSTART's comments, staff has developed initiatives S10.3 and S18.3 to assist in future roadmapping efforts. S10.3 will assist in the development of detailed applied research roadmaps, while S18.3 will build on the efforts of S10.3 and apply more broadly to the development, demonstration, and market integration of technologies.

Staff believes that the CGEC's recommendation to conduct a geothermal heat pump barrier and implementation study may be within the scope of Strategic Objective S.18. However, more investigation is needed on this suggestion to determine cost of the potential project and to verify that it is not already being done elsewhere. This project may be better suited to the next investment plan.

In response to the Efficiency Council, staff believes that gap analysis for energy efficiency is included within the scope of initiatives under Strategic Objectives S.10 and S.18.

With respect to PFT's comments, staff has incorporated Strategic Objective S.5 to evaluate the environmental impacts of various clean energy technologies.

Other Comments Related to Market Facilitation

Summary of Comments

CALSTART's comments requested inclusion of education and outreach efforts on PEVs. CALSTART also suggested inclusion of direct market support, in the form of buy-downs, for PEVs.[312]

Discussion and Staff Response

The proposed investment plan does not limit market facilitation activities to certain clean energy technologies. Initiatives S16.1 through S16.6 are inclusive of all clean energy technologies, and staff believes that PEVs are included within the scope of these activities.

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[311] Pacific Forest Trust comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Pacific_Forest_Trust_Comments_TN-67447.pdf

[312] CALSTART comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_CALSTARTs_Comments_TN-67490.pdf

However, staff has not proposed electric vehicle buy-downs as part of Market Facilitation investments because the CPUC EPIC decision does not permit the use of EPIC funds for market support. Other programs, such as the AB 118 electric vehicle buy-down program, are available to help serve this purpose.

New Solar Homes Partnership

Summary of Comments

CCSE commented in support of continued funding for the NSHP as "a priority if enabled by additional legislation."[313]

PG&E's comments were "supportive of working with the CEC to identify ways to further streamline the forms and processes associated with [the NSHP]." PG&E suggested that public workshops to discuss the NSHP would be helpful.[314]

The Solar Energy Industries Association (SEIA), the Vote Solar Initiative (Vote Solar), and the California Building Industry Association (Joint Solar Parties) submitted joint comments. The Joint Solar Parties support the inclusion of the NSHP within the EPIC investment plan, but request that the annual funding level be augmented so that it is "consistent with statutory requirements and unprecedented builder demand." The Joint Solar Parties assert that this recommendation would result in a total amount of $200-$250 million allocated evenly over the remaining years for the NSHP (through 2016). The Joint Solar Parties are also "concerned with the proposals to shorten the maximum reservation period for NSHP project incentives and to prohibit 'reuse' of prior incentive reservations."[315]

Discussion and Staff Response

The CPUC's EPIC Phase 2 decision stated that existing law prevented the CPUC from funding the NSHP without reducing the California Solar Initiative (CSI) program budget.[316] SB 1018 (Statutes of 2012, Chapter 39, Section 111) removes this barrier by modifying the Public Utilities Code Section 2851 (e), allowing EPIC moneys to fund NSHP without affecting the CSI program budget.

Staff intends to collaborate with the IOUs and other stakeholder groups to streamline the application forms and processes for the NSHP.

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[313] CCSE comments www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Center_for_Sustainable_Energys_Comments-TN-67493.pdf

[314] PG&E comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Pacific_Gas_and_Electric_Company_Comments_TN-67464.pdf

[315] Joint Solar Parties comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_SEIA_VSI_and_CBIA_joint_comment_letter_TN-67500.pdf

[316] CPUC *Phase 2 Decision Establishing Purposes And Governance For Electric Program Investment Charge And Establishing Funding Collections for 2013-2020* http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF

Energy Commission staff is planning a workshop in Winter 2012 to discuss a variety of topics related to solar on new homes. Staff will use information from this workshop to improve the NSHP program.

Staff has revised the proposal regarding EPIC funding for NSHP to propose collection of $25 million each year for NSHP beginning in 2013. If EPIC funds are not needed for the NSHP in any given year, because of repayments to the Renewable Resources Trust Fund or lower than expected program demand, the funds should be retained by the investor-owned utilities and carried forward to future years. The CPUC EPIC Phase 2 decision recommends authorizing funding of $25 million a year. Additional funds that become available through loan repayments will be used for NSHP projects before EPIC funds are used.

Staff agrees with the Joint Solar Parties concern regarding a shortened maximum reservation period for NSHP projects. Staff also agrees with the Joint Solar Parties concern that unused funds from prior incentive reservations will not be returned for use by NSHP. These concerns can only be addressed by the Legislature, and staff is working to achieve a satisfactory resolution of these issues.

Program Benefits Assessment

Summary of Comments

Carl Blumstein of the California Institute for Energy and Environment recommended that the investment plan be revised to explicitly include funding for evaluation of EPIC projects. The participant suggests a budget of $2.5 million that would be used "to support an EPIC-program evaluation staff and, when appropriate, the services of outside experts." These comments suggested broadening the scope of the EPIC evaluation criteria to include process evaluation, critical project reviews, and performance evaluation of the research institutes that receive EPIC funding.[317]

Discussion and Staff Response

Staff acknowledges comments from the California Institute for Energy and Environment. In response to these comments, staff has included an evaluation initiative in Strategic Objective S.18 of the proposed investment plan.

[317] Carl Blumstein comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Carl_Blumstein_Public_Comments_TN-67444.pdf

Program Administration

Summary of Comments

With respect to solicitations for EPIC projects, the California ISO submitted comments suggesting that non-California agencies and businesses "should not be precluded from bidding nor should their proposal(s) be ranked lower in the scoring criteria."[318]

EGR commented that $4-5 million per year should be available and reset each year. EGR provided several recommendations to refine the proposed competitive process in the investment plan. EGR also suggested that Energy Commission staff be able to travel to effectively perform duties.[319]

UC Solar offered its general support of the proposed investment plan, and expressed appreciation for "establishing a competitive process for EPIC investments in research centers."[320]

The Joint Environmental Parties' comments offered support for stakeholder consultation and agreed with the draft plan's proposal to conduct public forums at a minimum of twice per year. The Parties encourage the Energy Commission to conduct outreach efforts, and specify that they "do not believe that the 10% administrative cap should cover outreach efforts, and that outreach efforts should be expanded to include at least one opportunity for the CEC to present the activities currently funded under EPIC in a public forum."[321]

The Efficiency Council is supportive of a two-stage solicitation process as suggested at the workshop stating that it may help improve the proposals and reduce time and effort wasted by both the proposers and evaluators.[322]

NTT requested that the application process be developed in such a way that allows for participation from a wide audience rather than one limited to those in academia or technical positions.[323]

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[318] California ISO comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-04_California_ISO_Comments_TN-67528.pdf

[319] EGR comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Electric_Grid_Research_comments_TN-67476.pdf

[320] UC Solar comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_UC_Solar_Comments_TN-67398.pdf

[321] Joint Environmental Parties comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_NRDC_and_the_Union_of_Concerned_Scientists_Comments_TN-67492.pdf

[322] Efficiency Council comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Energy_Efficiency_Industry_Councils_Comments_TN-67462.pdf

Humboldt State University (HSU) submitted comments in support of "open competition for available funds as EPIC program investments are made." HSU also commented that "[t]he availability of funds as costshare for federal proposals is applauded as a mechanism to provide California with a competitive advantage for other funding opportunities." HSU provided comments in support of the Energy Commission's collaboration with other administrators to minimize overlap and "identify ways to streamline process and work collaboratively with interested partners."[324]

Discussion and Staff Response

Staff acknowledges the stakeholder support provided above; staff has considered these comments in preparation of the proposed investment plan.

In response to comments from the Joint Environmental Parties, initiative S16.2 of the proposed investment plan identifies a periodic forum to solicit industry feedback and inform stakeholders of the status of EPIC projects.

Intellectual Property

Summary of Comments

The Joint Environmental Parties "strongly support the Commission ensuring that research geared towards new knowledge, rather than product development, remain in the public domain."[325]

Discussion and Staff Response

Staff acknowledges the support of the Joint Environmental Parties and has considered these comments preparation of the proposed investment plan.

Match Funding

Summary of Comments

The California Geothermal Energy Collaborative (CGEC) of UC Davis recommended that match funding be scaled to local conditions and allow for flexibility to secure "in-kind" match shares. CGEC also suggested that no more than 10% should be set aside for match funding of federal

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[323]NTT comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-26_Comments_from_Nautical_Torque_Technology_re_EPIC_Funding_TN-67344.pdf

[324] Humboldt State University comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Humboldt-State_Universitys-Comments_TN-67491.pdf

[325] Joint Environmental Parties comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_NRDC_and_the_Union_of_Concerned_Scientists_Comments_TN-67492.pdf

awards, and that unused funds should be allowed to be reallocated to other EPIC initiatives at the end of the triennial cycle.[326]

In its comments, the Efficiency Council provided that "a minimum match or a match scoring criterion may not be appropriate for initiatives that fund innovative strategies and methods to enhance adoption of clean energy technologies […] While a match is appropriate for partners that are investing their own resources to take products to market, some projects, especially those focused on integrated solutions, need advancement and innovation in processes and methods." Efficiency Council recommended that the investment plan be revised to "reduce emphasis on the matching requirement or scoring for process-focused initiatives in all three research areas."[327]

EGR suggested that the scope or definition of match funds should be broadened to include match funds from third parties, such as WECC and CEATI, and ways to expedite the process.[328]

Discussion and Staff Response

Match funding is not required for applied research projects.

Technology demonstration and deployment projects will require cash match funding of 20 percent of the proposal total. Proposals submitted with match funding higher than 20 percent required will receive additional credit.

Advisory Committee

Summary of Comments

The California Independent System Operator (California ISO) provided comments in strong support of "creating technical and project advisory committees to review funding requests." California ISO believes that the Energy Commission should establish Project Fact Sheets as part of the regularly scheduled reporting process, especially for applied research projects, for the technical and project advisory committees to review.[329]

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[326] CGEC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-27_UC_Davis_Comments_TN-67473.pdf

[327] Efficiency Council comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Energy_Efficiency_Industry_Councils_Comments_TN-67462.pdf

[328] EGR comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Electric_Grid_Research_comments_TN-67476.pdf

[329] California ISO comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-04_California_ISO_Comments_TN-67528.pdf

PG&E suggested that the Energy Commission should revise its investment plan to include a more detailed discussion of the program governance and coordination for advisory committees.[330]

The National Asian American Coalition recommended that at least three of the advisory board members be from community based organizations located in and serving communities in California.[331]

The Joint Environmental Parties offered comments in support of creating an advisory committee. The Parties suggested that the "advisory committee would be composed of about 15-25 key stakeholders, including, but not limited to, the legislature, sister agencies, utilities, researchers, industry associations, consumer and environmental groups, and other key stakeholders." The Parties also suggested that the committee meet two to three times each year to openly discuss "key issues facing the EPIC program, including strategy, coordination with outside agencies and programs, and other issues as needed." The Joint Environmental Parties recognize that the advisory committee should not have decision-making authority.[332]

EGR provided comments in support of establishing an advisory structure. EGR mentioned that the Transmission Research Program under PIER might serve as a model for the EPIC advisory structure.[333]

David Hull and Associates,[334] Ocean Renewable Power Company,[335] Ocean Wave Energy Company,[336] Sound & Sea Technology, Inc.,[337] Verdant Power,[338] the Center for Coastal Marine

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[330] PG&E comments http://energy.ca.gov/research/epic/documents/2012-08-09-10_workshop/comments/2012-08-17_Comment_Letter_from_Pacific_Gas_and_Electric_Company_TN-66793.pdf

[331] NAAC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_National_Asian_American_Coalitions_Comments_TN-67474.pdf

[332] Joint Environmental Parties comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_NRDC_and_the_Union_of_Concerned_Scientists_Comments_TN-67492.pdf

[333] EGR comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Electric_Grid_Research_comments_TN-67476.pdf

[334] David Hull and Associates comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_David_Hull_and_Associates_Comments_TN-67397.pdf

[335] Ocean Renewable Power Company comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Ocean_Renewable_Power_Company_Comments_TN-67399.pdf

[336] Ocean Wave Energy Company comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-29_Ocean_Wave_Energy_Company_Comments_TN-67391.pdf

[337] Sound & Sea Technology comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Wave_and_Offshore_Wind_Comments_TN-67446.pdf

[338] Verdant Power comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Verdant_Power_Comments_TN-67450.pdf

Sciences at Cal Poly,[339] Ecomerit Technologies, LLC,[340] Re Vision Consulting,[341] and Dresser-Rand Company[342] provided comments in support of establishing a marine energy sector advisory group.

OREC[343] and William F. Lyte of Protean North America[344] also expressed support for the formation of an advisory group for marine energy. In addition, both participants suggest that OREC be the entity to oversee the formation of the group, working closely with the California Community Colleges Centers for Applied Competitive Technologies (CACT).

William Toman's comments supported the formation of an advisory group that involves the marine energy sector. This participant suggested that OREC should work in consultation with the California Marine Renewable Energy to oversee the marine energy advisory group.[345]

The Efficiency Council expressed support for creating technical and/or project advisory committees for research projects.[346]

CALMITSAC offered to lead the effort to establish a Maritime Energy Sector Advisory Group.[347]

Tri-Agency offers to lead the Forest Products Advisory Group.[348]

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[339] Center for Coastal Marine Sciences comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Center_for_Coastal_Marine_Sciences_at_Cal_Poly_comments_TN-67479.pdf

[340]Ecomerit Technologies comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Ecomerit_Technologies_LLCs_Comments_TN-67483.pdf

[341] ReVision Consulting comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Re_Vision_Consultings_Comments_TN-67405.pdf

[342] Dresser-Rand Company comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Dresser-Rand_Company_Comments_TN-67392.pdf

[343] OREC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Ocean_Renewable_Energy_Coalition_Comments_TN-67400%20.pdf

[344] William F. Lyte comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-23_Protean_North_America_Inc_Comment_TN-67261.pdf

[345] William Toman comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_William_Toman_comment_TN-67505.pdf

[346] Efficiency Council comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Energy_Efficiency_Industry_Councils_Comments_TN-67462.pdf

[347] CALMITSAC comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Marine_and_Intermodal_Transportation_System_Advisory_Council_Comments_TN-67452r.pdf

[348]Tri-Agency comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-01_Tri-Agency_Economic_Development_Authority_Comments_TN-67441.pdf

Discussion and Staff Response

Staff has considered these comments in preparing the proposed investment plan. Please see the proposed investment plan for a more detailed discussion of advisory committees.

General Comments / Other Topics

This section provides a summary of comments that did not address a specific part of the draft proposed investment plan.

Summary of Comments

CCSE recommended that EPIC funding prioritize investments in efforts that support existing programs. Specifically, CCSE discussed the importance of maintaining publicly available databases that provide information on the results of projects installed under existing Energy Commission and CPUC incentive programs for renewable technologies. CCSE also recommended that S2.1 be expanded "to include an effort to standardize the communications protocols for EVs and EVSE, perhaps by working with SAE or other standards bodies."[349]

PG&E recommended "an assessment of existing research, development, and deployment (RD&D), both in California and nationally, be performed to identify potential duplication areas." PG&E's comments emphasized the importance of close collaboration with the IOUs to avoid duplication, particularly in the areas of energy efficiency, demand response, and smart grid initiatives.[350]

Defenders of Wildlife and the Sierra Club (Joint Parties) submitted joint comments in support for the EPIC program. The Joint Parties offered recommendations for revising the draft investment plan. The Joint Parties do not fully agree that the research projects through S5.2 will remove barriers and delays in the siting of renewable energy generation and transmission lines.

The Joint Parties recommended that the Energy Commission's EPIC investment plan focus on promotion of "[e]nergy efficiency, especially with regards to lighting, which consumes 25% of California's electrical power, distributed generation – small-scale power generation located close to electricity loads, generation at or near load centers, and energy storage." The Joint Parties noted that these programs should "minimize dependency on remote utility-scale generation facilities requiring long transmission infrastructure and expensive upgrades that reduce efficiency due to conductor resistance over long distances."[351]

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[349] CCSE comments www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_California_Center_for_Sustainable_Energys_Comments-TN-67493.pdf

[350] PG&E comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Pacific_Gas_and_Electric_Company_Comments_TN-67464.pdf

[351] Defenders of Wildlife and the Sierra Club comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Defenders_of_Wildlife_and_Sierra_Club_Comments_TN-67458.pdf

Professor Biggart of the Energy Efficiency Center at UC Davis recommended revisions to chapters 3-5 of the EPIC investment plan to include clearer mention of and commitment to achieving the goals identified in the *California Energy Efficiency Strategic Plan.*[352]

Frank Brandt provided comments opposing the use of EPIC funds, and more generally the use of ratepayer funds, for the development and deployment of renewable energy and other technologies included in the draft investment plan.[353]

Discussion and Staff Response

Staff considered these comments in its preparation of the proposed investment plan.

In response to CCSE's comments, the proposed investment plan includes a technology tracker mechanism that will provide information on EPIC-funded projects in initiative S16.1.
In response to PG&E, a scenario assessment and gap analysis initiative was added to the applied research section of the proposed investment plan, S10.3: Conduct Scenario Assessments and Gaps Analyses That Will Be Used to Develop or Update Research Roadmaps.

With respect to comments submitted by Defenders of Wildlife and the Sierra Club, the proposed investment plan includes funding to advance energy efficiency in Strategic Objectives S1 Develop Next-Generation End-Use Energy Efficiency Technologies and Strategies for the Building, Water, and Wastewater Sectors; S2 Develop New Technologies and Applications That Enable Cost-Beneficial Customer-Side-of-the-Meter Energy Choices; and S12 Demonstrate and Evaluate the Technical and Economic Performance of Emerging Efficiency and Demand-side Management Technologies and Strategies in Major End-Use Sectors.

[352] Nicole Woolsey Biggart comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-10-02_Nicole_Woolsey_Biggart_of_UC_Davis_Comments_TN-67506.pdf
[353]Frank Brandt comments http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/comments/2012-09-28_Frank_Brandt_Comment_TN-67388.pdf

APPENDIX C:
Summary of Stakeholder Comments Presented During the September 27, 2012 Workshop on the Electric Program Investment Charge

The Energy Commission held a public workshop to discuss the draft *Electric Program Investment Charge Proposed 2012-14 Triennial Investment Plan* on September 27, 2012, in Sacramento, California.[354] Several participants offered verbal public comment during the workshop, and many others submitted written comments to the Energy Commission for consideration.

Below is a summary of comments, organized by topic, presented during the workshop by participants who did not subsequently submit written comments. During the workshop, Commissioners and Commission staff provided responses to these comments.[355] Staff has considered these comments, along with those submitted in writing, in its deliberations resulting in this *Proposed 2012-14 Triennial Investment Plan*.

Applied Research

Participants' Comments

Todd Maki provided comments on behalf of Electric Power Research Institute (EPRI). Mr. Maki commended the Energy Commission on its work resulting in the draft investment plan, and offered EPRI's appreciation for the draft plan's "emphasis on minimizing the amount of duplication in R&D that these funds will go to…as well as maximizing the amount of leverage that these funds can provide to activities that are already going on both nationally, in the U.S., as well as internationally."[356]

Mr. Maki asserted that it is important for the Energy Commission to incorporate a "process or opportunity for the IOUs to engage directly in… applied R&D as well," with specific mention of smart grid technologies, energy efficiency, and demand response technologies.[357]

Leonard Devanna provided comments on behalf of Clean Energy Systems. Mr. Devanna requested that the Energy Commission cross-reference the California Council on Science and Technology's *California Energy Future: The View to 2050* report and incorporate its findings within the EPIC investment plan by including opportunities for funding such activities. Mr. Devanna provided some examples of efforts that the report identified as critical to achieving

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[354] The transcript from the September 27, 2012 workshop is available online at http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/2012-09-27_transcript.pdf

[355] To read the responses provided by Commissioners and Commission staff, see the workshop transcript at: http://www.energy.ca.gov/research/epic/documents/2012-09-27_workshop/2012-09-27_transcript.pdf.

[356] Transcript pp.79-80

[357] Transcript p. 81

AB32 reductions, such as "achieving 100 percent carbon capture utilization, achieving zero emission load balancing plants, achieving net zero greenhouse gas emissions with biofuels, and de-carbonizing technologies that de-carbonize natural gas to hydrogen."[358]

General Comments / Other Topics

New Solar Homes Partnership

Participants' Comments

Blair Swezey provided comments on behalf of SunPower Corporation (SunPower) regarding the New Solar Homes Partnership (NSHP). Mr. Swezey offered SunPower's support for the inclusion of the NSHP within the Energy Commission's draft investment plan. Mr. Swezey expressed concern with the "amount and the timing of the funding, particularly with uncertainty about payback of the previously borrowed funds."[359]

Mr. Swezey also requested clarification on the driver behind the proposed changes in the incentive reservation term, and provided that "builders really do need an adequate planning period in order to implement the program effectively."[360]

Dan Chia provided comments on behalf of SolarCity in support of the inclusion of the NSHP within the draft investment plan. Mr. Chia requested clarification on how the Commission arrived at an amount of $25 million in funding for the NSHP under the EPIC. Mr. Chia further requested clarification on how this funding amount "relates to the statutory goal of $400 million for the program."[361]

Program Administration

Participants' Comments

Kristin Carter provided comments on behalf of Grant Management Associates (GMA) regarding the solicitation process. Ms. Carter shared that GMA's clients often have difficulty "produc[ing] a letter of commitment in the short time frame [identified in] solicitation[s]." Ms. Carter requested that the Commission consider "award[ing] more points in the solicitation process for letters of firm commitment that are submitted with the application," but recommended that this not be required as part of the application process.[362]

Ms. Carter also suggested that the Energy Commission consider utilizing a "pre-proposal process," similar to that used in the Department of Energy's SunShot Initiative, to assist applicants in submitting complete applications that align with the requested results.[363]

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[358] Transcript pp.116-117
[359] Transcript p.108
[360] Transcript p.109
[361] Transcript pp.118-121
[362] Transcript p. 105
[363] Transcript p.106

Lastly, Ms. Carter offered comments regarding royalties suggesting that the Commission re-consider its use of royalty clauses.[364]

[364] Transcript pp.106-107

APPENDIX D:
Tentative Implementation Schedule for the 2012-14 Electric Program Investment Charge Investment Plan

Below is the Energy Commission's anticipated implementation schedule. It reflects consideration of the initiatives that are most needed immediately, and can be initiated relatively quickly verses ones that are more complex and will require more development time (i.e., some of the demonstration projects), need further scoping to focus the solicitation needs, or would be better timed to follow behind other research activities. It will be important to maintain flexibility in the actual implementation schedule to reflect emerging energy issues, to capture new opportunities to leverage funds, and to reflect resource availability.

Applied Research and Development	Priorities in Each Year	
	2013/14	2014/15
Energy Efficiency and Demand Response		
S1: Develop Next-Generation End-Use Energy Efficiency Technologies and Strategies for the Building Sector.		
S1.1Develop, Test, and Demonstrate Next-Generation Lighting Systems and Components.	X	
S1.2 Develop, Test, Demonstrate, and Integrate Equipment, Systems, and Components That Improve the Energy Efficiency Existing and Advanced Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.	X	
S1.3 Develop, Test, and Demonstrate Advanced Building Envelope Systems, Materials, and Components.	X	
S1.4Investigate and Improve Understanding of Building Occupant Behavior and Related Consumer Choice Motivations to Increase and Sustain Energy Efficiency Improvements in Buildings	X	
S1.5 Develop Cost-Effective Retrofit Strategies to Achieve Greater Energy Efficiency in Existing Residential and Nonresidential Buildings.	X	
S1.6 Reduce the Energy Use of Plug-Load Devices Through the Development of Products, Systems, and Controls, and Evaluation of Consumer Behavior That Affect Energy Use.	X	
S1.7 Develop and Evaluate Ideal Strategies to Improve Indoor Air Quality in Energy-Efficient Buildings	X	
S1.8 Develop Cost-Effective Technologies and Approaches to Achieve California's Zero Net Energy Buildings Goal.	X	

S2: Develop New Technologies and Applications That Enable Cost-Beneficial Customer-Side-of-the-Meter Energy Choices		
S2.1 Develop Cost-Effective Metering and Telemetry to Allow Customers with Demand Response, Distributed Generation, Plug In Electric Vehicles, and Energy Storage to Participate in California ISO Markets and/or Provide Grid Services.	**X**	
S2.2 Develop Demand Response Technologies and Strategies to Allow Customers to Participate in Ancillary Service Markets and/or in Dynamic Price and Reliability-Based DR Programs and Market Transactions in Retail and Wholesale Markets.		**X**
S2.3 Demonstrate and Evaluate the Integration of Distributed Energy Resources, Including Storage and Demand Response, at the Community Scale and in Microgrids.		**X**
S2.4 Develop and Test Novel Technologies, Strategies, and Applications That Improve the Business Case for Customer-Side Dispatchable Distributed Resources and/or Expansion of Demand Response Capabilities.	**X**	
Clean Generation		
S3: Develop Innovative Technologies, Tools and Strategies to Improve the Affordability of Distributed Generation		
S3.1 Develop Next Generation Combined Heat and Power Technologies and Deployment Strategies.	**X**	
S3.2 Develop Innovative Technologies, Techniques, and Deployment Strategies to Accelerate the Commercialization	**X**	
S3.3 Develop Advanced Distributed Photovoltaic Systems to Reduce the Cost of Energy, Increase Interoperability, and Advance Plug-and-Play Capabilities		**X**
S4: Develop Emerging Utility-Scale Renewable Energy Generation Technologies and Strategies to Increase Power Plant Performance, Reduce Costs, and Expand the Resource Base		
S4.1 Develop Advanced Utility-Scale Thermal Energy Storage Technologies to Improve Performance of Concentrating Solar Power..		**X**
S4.2 Develop Innovative Tools and Strategies to Increase Utility-Scale Renewable Energy Power Plant Performance and Reliability.		**X**
S4.3 Develop Advanced Technologies and Strategies to Improve the Cost-Effectiveness of Geothermal Energy Production	**X**	
S4.4 Investigate the Economic, Environmental and Technical Barriers to Offshore Wind in California.		**X**
S4.5 Investigate the Economic, Environmental and Technical Barriers to Wave Energy Conversion Technologies in California.		**X**
S5: Reduce the Environmental and Public Health Impacts of Electricity Generation and Make the Electricity System Less Vulnerable to Climate Impacts.		

S5.1 Conduct Air Quality Research to Address Environmental and Public Health Effects of Conventional and Renewable Energy and to Facilitate Renewable Energy Deployment.	X	X
S5.2 Research on Sensitive Species and Habitats to Inform Renewable Energy Planning and Deployment.	X	X
S5.3 Develop Analytical Tools and Technologies to Reduce Energy Stresses on Aquatic Resources Water and Improve Water-Energy Management.		X
S5.4 Develop Analytical Tools and Technologies to Plan for and Minimize the Impacts of Climate Change on the Electricity System		X
Smart Grid Enabling Clean Technology		
S6: Develop Technologies, Tools, and Strategies to Enable the Smart Grid of 2020		
S6.1 Develop Equipment and Technologies to Enable Power Flow Control and Bi-Directional Power Flow Through the Transmission and Distribution System.		X
S6.2 Develop Controls and Equipment to Expand Distribution Automation Capabilities		X
S6.3 Develop Automation and Operational Practices to Make Use of Smart Grid Equipment		X
S6.4 Develop Grid Operation Practices and Applications that Use Renewable Availability Data.		X
S6.5 Develop Smart Grid Communication Systems that Interface with Customer Premise Networks and Distributed Energy Resources.		X
S7: Develop Operational Tools, Models, And Simulations for Improved Planning of Grid Resources.		
S7.1 Determine the Characteristics of the Generation Fleet of 2020 for Grid Operators and Planners.	X	
S7.2 Catalog Distributed Energy Resources to Improve Operator Dispatch and Visibility.	X	
S7.3 Develop and Run Real-Time Scenarios to Support Operations, Including Energy Storage Utilization.	X	
S7.4 Develop Interoperability Test Tools and Procedures to Validate New Subsystem Integration into the Grid.	X	
S8: Integrate Grid-Level Energy Storage Technologies and Determine Best Use Applications to Provide Locational Benefits		
S8.1 Optimize Grid-Level Energy Storage Deployment with Respect to Location, Size, and Type.	X	
S8.2 Develop Innovative Utility-Scale and Generation Energy Storage Technologies and Applications to Mitigate Intermittent Renewables and Meet Peak Demand.	X	

S9: Advance Technologies and Strategies That Optimize the Benefits of Plug-in Electric Vehicles to the Electricity System		
S9.1 Investigate Smart and Efficient Charging Technologies and Approaches to Integrate Plug-In Electric Vehicles into the Power Grid.		**X**
S9.2 Develop Grid Communication Interfaces for Plug-In Electric Vehicle Charging to Support Vehicle-to-Grid Services.		**X**
S9.4 Advance the Economics and Business Case of Distributed Storage through the Development of Second-Use EV Battery Storage Applications.		**X**
S9.5 Develop Advanced Recycling Technologies and Processes for Recycling Plug-In Electric Vehicle Batteries.		**X**
Cross-Cutting		
S10: Leverage California's Regional Innovation Clusters to Accelerate the Deployment of Early-Stage Clean Energy Technologies and Companies		
S10.1 Provide Small Grants to Early-Stage Energy Companies and Entrepreneurs Through Regional Innovation Clusters.		**X**
S10.2 Support Demonstration Testing and Verification Centers to Accelerate the Deployment of Pre-Commercial Clean Energy Technologies.		**X**
S10.3 Conduct Scenario Assessments and Gaps Analyses That Will Be Used to Develop or Update Research Roadmaps.	**X**	
S11: Provide Cost Share for Federal Awards		
S11.1 Provide Cost Share for Federal Awards.	**X**	**X**

Technology Demonstration and Deployment	**Priorities in Each Year**	
	2013/14	**2014/15**
S12: Demonstrate and Evaluate the Technical and Economic Performance of Emerging Efficiency and Demand-Side Management Technologies and Strategies in Major End-Use Sectors		
S12.1 Identify and Demonstrate Promising Energy Efficiency and Demand Response Technologies Suitable for Commercialization And Utility Rebate Programs.	**X**	
S12.2 Demonstrate Integrated Demand Side Management Programs-Using Emerging Efficiency, Demand Response, Distributed, Metering and other Grid Related Technologies-For the Residential, Commercial, Industrial and Agriculture Sectors .		**X**

S13: Demonstrate and Evaluate Emerging Clean Energy Generation Technologies and Deployment Strategies		
S13.1 Demonstrate and Appraise the Operational and Performance Characteristics of Pre-Commercial Biomass Conversion Technologies, Generation Systems, and Development Strategies.	**X**	
S13.2 Demonstrate and Deploy Pre-Commercial Technologies and Strategies for Combined Heat and Power Applications.	**X**	
S13.3 Demonstrate Technologies and Strategies to Facilitate the Integration of Intermittent Renewable Energy.	**X**	
S14: Demonstrate the Reliable Integration of Energy Efficient Demand-side Resources, Distributed Clean Energy Generation, and Smart Grid Components to Enable Energy-smart Community Development.		
S14.1 Demonstrate Zero-Net Energy Buildings and Communities.		**X**
S14.2 Demonstrate Renewable Energy-Based Microgrids Capable Of Sharing Resources Across the Larger Power Grid.		**X**
S14.3 Demonstrate Advanced Vehicle-to-Grid Energy Storage Technologies and Second-Use Vehicle Battery Applications.	**X**	
S15: Provide Cost Share for Federal Awards		
S15.1 Provide Cost Share for Federal Awards.	**X**	**X**

Market Facilitation	**Priorities in Each Year**	
	2013/14	**2014/15**
S16: Collaborate with local jurisdictions and stakeholder groups in IOU territories to establish strategies for enhancing current regulatory assistance and permit streamlining efforts that facilitate coordinated investments and widespread deployment of clean energy infrastructure		
S16.1 Conduct Pilot Demonstrations of Localized Energy Resource Markets.	**X**	
S16.2 Provide Planning Grants to Cities and Counties to Incorporate Clean Energy Technology Planning and Permitting Processes into Local Government Land Use Planning.	**X**	
S16.3 Conduct a Local Government Needs Assessment Study That Identifies Regulatory Gaps Within Local Planning and Zoning Processes.	**X**	
S16.4 Collaborate with Local Jurisdictions and Industry Stakeholders to Create Model Ordinances for Emerging Clean Energy Technologies.	**X**	

S16.5 Provide Funding to Assist in the Development of the General Plan Guidelines.	**X**	
S16.6 Develop Consensus Based Educational Materials for Local Officials Interested in Facilitating Clean Energy Market Growth.	**X**	
S17: Strengthen the clean energy workforce by creating tools and resources that connect the clean energy industry to the labor market		
S17.1 Provide Grants to Develop and Enhance Training and Apprenticeship Programs to Support Clean Energy Deployment Programs in IOU Service Territories.	**X**	
S18: Strategic Objective: Guide EPIC investments through effective market assessment, program evaluation, and stakeholder outreach		
S18.1 Create a Web Portal that Connects Innovators, Investors, Educators, Job Seekers, and Policy Makers to Facilitate Wide-Spread Adoption of New Clean Energy Technologies within Communities Statewide.	**X**	
S18.2 Conduct Technology Forums to Connect Innovators of Clean Energy Technologies with Potential Investors, Customers, Job Seekers, and Policymakers.	**X**	**X**
S18.3 Conduct Technology and Environmental Assessments to Track Progress in the Clean Energy Industry and Identify Future Needs	**X**	
S18.4 Conduct the California End-use Energy Consumption and Saturation Characterization Survey.	**X**	
S18.5 Conduct Market Analysis of Innovative Strategies to Facilitate Clean Energy Storage, Demand Response, Electric Vehicles, and Renewable Energy.	**X**	
S18.6 Conduct Project and Program Evaluation.	**X**	

APPENDIX E:
Sample Program Opportunity Notice Template

This appendix includes links to a sample Program Opportunity Notice template and its attachments. This sample template is for illustrative purposes only and the actual Program Opportunity Notice may be different.

Sample Program Opportunity Notice Template:

http://www.energy.ca.gov/research/epic/documents/

Sample Budget Form:

http://www.energy.ca.gov/research/epic/documents/

Sample Invoice Template:

http://www.energy.ca.gov/research/epic/documents/