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**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE
STATE OF CALIFORNIA**

Order Instituting Rulemaking On The
Commission's Own Motion To Consider
Renewal Of The Electric Program Investment
Charge Program.

R.19-10-005

COMMENTS OF SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) ON
ALJ GLEGOLA'S JULY 22, 2020 PROPOSED DECISION RENEWING THE
ELECTRIC PROGRAM INVESTMENT CHARGE PROGRAM

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Dated: **August 11, 2020**

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SUBJECT INDEX OF RECOMMENDED CHANGES

Pursuant to Rule 14.3(b) of the California Public Utilities Commission's (Commission's) Rules of Practice and Procedure, Southern California Edison Company (SCE) provides the following Subject Index of Recommended Changes in support of its Comments on the July 22, 2020 Proposed Decision Renewing the Electric Program Investment Charge (EPIC):

- Utility administration of EPIC is crucial to integrating these technologies. Such administration directly supports California's energy and environmental policies, and results in significant value to customers. Given the crucial role grid integration demonstrations play in supporting key energy and environmental policies and in light of the benefits that utility-administered EPIC investments are yielding, SCE respectfully submits that the PD be modified to continue the Utilities as EPIC Administrators along with the CEC.¹
- SCE requests the opportunity to demonstrate compliance with the administrative improvements proposed for EPIC III projects in the Research Administration Plan (RAP) Application and approved by the Commission, as well as the administrative recommendations that will be discussed in Phase 2.²
- The Commission grant the Utilities the opportunity to provide an EPIC Benefits Report, which would: (1) share the forecast benefits for the Utilities' EPIC III projects; and (2) provide an update on the Utilities' assessment of the benefits that have resulted (or are forecast to result from) their EPIC I and EPIC II projects. SCE recommends that the Commission direct the Utilities to file their respective EPIC Benefits Reports 30 days from the date of these opening comments. (In other words, the Utilities would file their EPIC Benefits Reports no later than September 10, 2020.)³
- If needed, the Commission should place a hold on the proposed decision to have the time it needs to consider SCE's recommendations and review SCE's proposed Benefits Report.⁴
- If the Utilities are fully reinstated as Administrators, then SCE will volunteer to take a prospective temporary reduction for EPIC IV of between 10 percent and 20 percent during the COVID pandemic. This voluntary reduction would apply to the EPIC IV Phase rather than the EPIC III Phase, since projects are nearing conclusion in Phase

¹ PD Comments, at p. 2.

² PD Comments, at p. 2.

³ PD Comments, at pp. 2 and 10.

⁴ PD Comments, at pp. 3 and 10.

III and reductions cannot be reasonably accommodated at this near end-stage of the project work.⁵

⁵ PD Comments, at p. 3.

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I.

INTRODUCTION

Pursuant to the California Public Utilities Commission's (Commission or CPUC) Rule 14.3(b) of the CPUC's Rules of Practice and Procedure, Southern California Edison Company (SCE) respectfully submits the following opening comments to Administrative Law Judge (ALJ) Glegola's July 22, 2020 Proposed Decision (PD) for Phase 1 of the Electric Program Investment Charge (EPIC) Rulemaking.

II.

DISCUSSION

A. Utility Administration is Critical to the Success of EPIC

SCE supports the PD's conclusion to renew the EPIC program for ten years through December 31, 2030, utilizing two five-year investment plan cycles (EPIC 4 and EPIC 5).⁶ To achieve California's energy policy goals, such as increasing Renewables Portfolio Standards

⁶ PD Ordering Paragraph 1, at p. 27.

(RPS) to 50% by 2030⁷ and 100% renewable and zero carbon resources by 2045,⁸ as well as environmental goals, such as greenhouse gas emission reductions of 40% below 1990 levels by 2030,⁹ the electric grid must become more adaptable and flexible. Increasing grid capabilities is critical to supporting these energy and environmental policy goals by integrating distributed, clean resources onto the grid, in order to provide safe, reliable, and affordable electric service for customers and communities.

While the PD renews the EPIC program, SCE believes the PD errs in deferring “to Phase 2 of this proceeding the role the Utilities will play going forward.”¹⁰ EPIC is currently the only utility program where new, pre-commercial grid technologies are demonstrated to determine their usefulness and reliability and where utilities can test how to safely, reliably, and affordably integrate these technologies onto the grid.¹¹ Utility administration of EPIC is crucial to integrating these technologies. Such administration directly supports California’s energy and environmental policies, and results in significant value to customers. Given the crucial role grid integration demonstrations play in supporting key energy and environmental policies and in light of the benefits that utility-administered EPIC investments are yielding,¹² SCE respectfully submits that the PD be modified to continue the Utilities as EPIC Administrators along with the CEC.

SCE requests the opportunity to demonstrate compliance with the administrative improvements proposed for EPIC III projects in the Research Administration Plan (RAP) Application,¹³ which was approved by the Commission,¹⁴ as well as the administrative

⁷ California, Senate Bill (SB) 350.

⁸ California, SB 100.

⁹ California, Assembly Bill (AB) 398.

¹⁰ PD, at p. 21.

¹¹ D.12-05-037, OP 17 at p. 106.

¹² PD, at pp. 11-12.

¹³ A.19-04-026.

¹⁴ D.20-02-003.

recommendations that will be discussed in Phase 2.¹⁵ SCE recommends that as part of Phase 2, the Commission direct the Energy Division to lead an assessment of the Utilities' EPIC III projects to determine compliance with the RAP Application. If needed, the Commission should place a hold on the proposed decision to have the time it needs to consider SCE's recommendations.

SCE administers EPIC for the benefit of our customers, and we recognize the current economic hardships that the global corona virus (COVID) pandemic has caused to them. To support affordability while protecting the critical role of Utility Administrators, SCE offers the following for the Commission's consideration: if the Utilities are fully reinstated as Administrators, then SCE will volunteer to take a prospective temporary reduction of between 10 percent and 20 percent during the COVID pandemic. This voluntary reduction would apply to the EPIC IV Phase rather than the EPIC III Phase, since projects are nearing conclusion in Phase III and reductions cannot be reasonably accommodated at this near end-stage of the project work. The reduction could be revisited at an appropriate time (to be determined by the Commission) when the pandemic has concluded or the virus is substantially under control in California. SCE welcomes further discussion of budget changes as the Commission has requested as part of Phase 2 of this Rulemaking.¹⁶

B. SCE's EPIC Administration Provides Significant Benefits

As the operators of the electric grid, the Utilities are uniquely qualified to understand how to identify grid needs, as well as safely, reliably and affordably integrate distributed, clean energy resources for the benefit of their customers. Since EPIC is funded by utility customers and the purpose of EPIC is to fund public interest investments for the benefit of utility customers,¹⁷ it is critical the Utilities remain Administrators and retain the ability to demonstrate

¹⁵ PD, at p. 24.

¹⁶ PD, at p. 23.

¹⁷ D.12-05-037, at p. 2.

pre-commercial technologies *in the utility operating environment* to help ensure that the most useful and cost-effective technologies are adopted for the benefit of utility customers. The PD substantiates the value to customers from the Utilities' EPIC administration by referencing the Commission's approval decision of the Utilities' EPIC III Investment Plans:¹⁸

[T]he Commission expressly stated that it was "pleased with the progress and achievements of the EPIC program to date, particularly in light of the fact that most investments only began several years ago," extremely recent in R&D terms. The Commission concluded that "while more can and will be done to improve program administration and investment planning, a solid foundation has been created upon which we can build further."¹⁹

C. Ramifications of Not Having the Utilities Remain as Administrators

The PD errs by not considering the extensive record of Utility value and support of energy and environmental policies, as well as key CPUC proceedings, before it summarily eliminates the Utilities as Administrators and defers the Utilities' (presumably non-administrative) involvement until Phase 2.

1. Reduced Support for Energy & Environmental Policy Goals & Key CPUC Proceedings

The Utilities' EPIC projects directly support key California energy and environmental goals of paramount importance to the Commission, such as integrating distributed energy resources (including in disadvantaged communities), enabling customer choice, fostering energy storage, spurring the electrification of transportation, addressing climate change impacts, and mitigating the risk and impact of wildfires. The Utilities' demonstrations provide operationally and economically valuable experience with pre-commercial technologies so that we can

¹⁸ D.18-10-052.

¹⁹ PD, at p. 6.

determine the potential for integrating these technologies onto the grid. Absent direct EPIC funding for the utilities, SCE would essentially no longer be able to demonstrate these grid technologies that help support the provision of safe, affordable, clean and reliable electric service, as well as solve emerging environmental challenges (e.g., climate change and wildfire mitigation) and operational opportunities (e.g., DER integration and customer choice).

Moreover, the absence of EPIC funds would also limit SCE's ability to support advancing electric standards efforts, which in turn facilitates the achievement of California's energy and environmental goals. SCE would consequently have a lesser ability to help support priority issues for the CPUC. In the past, SCE EPIC demonstrations have bolstered the distributed resources plan by helping to achieve pilot requirements.²⁰ Currently, EPIC III demonstrations are supporting such key energy issues as microgrids, and SCE's Smart Cities demonstration will be a community microgrid for resiliency purposes in a disadvantaged community (DAC). Additionally, SCE's Cybersecurity for Industrial Control Systems and Energy System Cybersecurity Posturing builds on the cybersecurity results of the California Energy Systems for the 21st Century Program.

If the utilities lose the flexibility and efficiency of being Administrators, the Commission would be less able to leverage grid integration and operations demonstrations to help find the right technological solutions to address climate change and wildfire mitigation.

These types of efforts simply cannot be conducted without EPIC funding and utility administration. The utilities require dedicated funding to plan for and conduct these types of demonstrations and investments, which are uniquely positioned to serve as the path to market for the results. Moreover, certain project results cannot be publicly disseminated if they are to remain deployable (e.g., cybersecurity). Eliminating utility administration of EPIC severely constrains SCE's ability to pursue such improvements.

²⁰ DRP, Demonstration D requirements were achieved through SCE's EPIC Integrated Grid Project.

2. Continued Success of the EPIC Depends on the CEC and Utilities Continuing to Administer Complementary Programs

The CEC and the Utilities administer complementary programs, and working together as co-Administrators helps maximize efforts to solve the emerging environmental challenges and operational opportunities for the grid. The CEC's administration of EPIC helps address emerging environmental challenges by obtaining project results that have provided additional and more granular data to help mitigate wildfires and climate change impacts. The CEC's administration of EPIC also aids in increasing the use and penetration of distributed energy resources, by advancing applied research and pre-commercial technologies, and thereby increasing customer choice.

The Utilities carefully incorporate the results of the CEC's work addressing the changing environment and distributed energy resources, such as better environmental data and advancements in distributed energy resources into grid integration demonstrations (e.g., SCE's EPIC III projects: Wildfire Prevention & Resiliency Technologies Demonstration,²¹ Next Generation Distribution Automation Phase III,²² and Beyond Lithium-Ion Energy Storage Demonstration²³). The Utilities also focus EPIC work in areas, such as grid planning, grid operations and cybersecurity, pertaining to critical grid infrastructure and customer accounts, which the CEC is precluded from working on due to its status as a public agency and its fiduciary responsibility to make all results public (with no means for confidentiality protections). SCE is very optimistic about the potential to further strengthen these complementary ties between the CEC and the Utilities' EPIC programs through the Policy + Innovation Coordination Group (PICG). The PICG Coordinator has selected the following areas of partnership:

- Equity,

²¹ RAP Application, Appendix E, at pp. E-1-2.

²² EPIC III Investment Plan, A.17-05-005, Appendix A, at p. A-9.

²³ RAP Application, Appendix E, at pp. E-3-4.

- Wildfire mitigation,
- Transportation electrification, and
- Public safety power shutoff.

SCE looks forward to working on these PICG areas of partnership and identifying project synergies among Administrators, as well as the potential for the Administrators to develop joint projects. However, without being an Administrator and having the associated funding, SCE's ability to work with the PICG would be jeopardized, because there would be no means to compensate the Utilities for spending time and resources on the PICG's partnership areas.

If the Utilities are no longer Administrators, we can expect to see less adoption of technologies, because the demonstrations would lack a means for demonstrating grid integration, which includes extensive safety tests and evaluations of technologies before deploying them on the grid. Consequently, the results of EPIC work would lack the integration details and complexities for which the Utilities possess in-depth expertise, given our role as operators of the grid. This will inevitably result in a lower quality of project results. Moreover, even if Utilities were able to provide the CEC with specific guidance on the grid integration demonstrations being currently conducted, it would slow the speed of demonstrations and result in a smaller volume of project results, compared to the current portfolios of work completed by the Utilities from their EPIC I and EPIC II Investment Plans. A slower speed and smaller volume of results would negatively affect the quality of support for California energy and environmental policies, as well as key Commission proceedings.

3. Negative Financial Impacts to SCE's Small, Diverse Businesses

The absence of Utilities as EPIC Administrators would also have a negative impact to our small, diverse businesses. During 2019, SCE "spent nearly \$1 million with diverse businesses in

support of SCE’s EPIC demonstration projects.”²⁴ Over the course of EPIC, SCE has spent \$20 million with our small, diverse business partners.²⁵ “These diverse businesses conducted studies and provided data and communication, as well as specialized computing equipment services”²⁶ in support of SCE’s EPIC Portfolios.

4. Negative Outreach & Engagement Impacts to SCE’s Most Vulnerable Customers in Disadvantaged Communities

SCE supports the Commission’s efforts to help DACs be able to pro-actively participate in, provide community feedback on, and directly benefit from EPIC investments. SCE’s EPIC technology labs in Westminster and Pomona (where SCE’s EPIC demonstrations take place) are located in DACs. Additionally, in the RAP Application, the Utilities proposed engaging in additional stakeholder outreach by conducting a public engagement prior to the launch of projects.²⁷ These public engagements, coupled with two workshops focused on DACs,²⁸ help provide a voice and a means for DACs to proactively participate in demonstrations that directly benefit their communities, and if the demonstration is successful, would lead to further deployment on the grid in DAC locations. If the Utilities were no longer Administrators, it would negatively impact SCE’s technology labs and EPIC demonstrations and other investments, which are sited in DACs. Moreover, not having the Utilities remain as EPIC Administrators removes a critical means of engagement for DACs in SCE’s service territory to participate in these local, public workshops and have a voice in EPIC investments by providing direct feedback to SCE and the Commission on how EPIC investments are (or are not) benefiting local communities.

²⁴ Supplier Diversity 2019 Annual Report/2020 Annual Plan at p. 19 (submitted to the CPUC on or about March 1, 2020).

²⁵ Total of \$20 million represents SCE’s spend with small, diverse businesses in support of EPIC projects from 2013-2019, as documented in the Supplier Diversity Annual Reports.

²⁶ *Ibid.*

²⁷ A.19-04-026 at pp. 13-14.

²⁸ D.18-10-052, Conclusion of Law 15 at p. 150.

D. It is Premature to Exclude the Utilities from Being Administrators

The Commission's decision approving the Utilities' EPIC III Investment Plans directed the Utilities to file a joint RAP that describes the Utilities' approaches to implementing improvements to the administration of their respective EPIC programs.²⁹ The EPIC III Decision deferred recommendations that the Utilities could not immediately implement until the subsequent rulemaking, which would address the most appropriate means for implementing these recommendations.³⁰ The Utilities' joint RAP Application³¹ provided administrative improvement proposals, including the Utilities' respective approaches to benefits quantification. The Commission approved the Utilities' joint RAP Application on February 10, 2020.³²

The PD expresses concerns over the Utilities' abilities to provide quantifiable benefits to ratepayers, stating "Less clear, however, are the benefits of the projects administered by the utility administrators."³³ The PD concludes that, because of these concerns over quantifiable benefits, "we do not continue the utilities' role as administrators,"³⁴ deferring the nature of any continued Utility involvement with the EPIC program to Phase 2 of the rulemaking.

Based on the merits of the administrative improvements included in the Utilities' RAP Application, the timing of the Commission's RAP decision, and the timing of the PD, SCE believes that the PD errs because the conclusion reached in the PD is premature and fails to provide the Utilities with sufficient opportunity to demonstrate their implementation of the administrative processes approved by this Commission *less than six months ago*. In the narrow timeframe since the Commission approved the Utilities' RAP Application in February 2020, none of the Utilities' respective EPIC III projects have had the opportunity to reach the completion stage.

²⁹ D.18-10-052, at OP 5.

³⁰ D.18-10-052, Appendix B at pp. 1-6.

³¹ A.19-04-026.

³² D.20-02-003.

³³ PD, at p. 16.

³⁴ PD, at p. 16.

As the Commission’s RAP Decision notes, SCE’s response for benefits quantification “was most complete, stating that ‘the Project Manager and technical team should attempt to identify and describe the expected benefits and develop a plan for denominating and measuring the benefits during project execution,’ and goes on to describe this process step by step in detail.”³⁵ SCE has prepared a detailed benefits quantification assessment and project management plan for each active EPIC III project approved after the Commission’s approval of Utilities’ joint RAP Application. These assessments provide clear evidence that SCE has in fact made substantial progress in quantifying benefits.

SCE proposes that the Commission grant the Utilities the opportunity to provide an EPIC Benefits Report, which would: (1) share the forecast benefits for the Utilities’ EPIC III projects; and (2) provide an update on the Utilities’ assessment of the benefits that have resulted (or are forecast to result from) their EPIC I and EPIC II projects.³⁶ SCE recommends that the Commission direct the Utilities to file their respective EPIC Benefits Reports 30 days from the date of the Commission’s direction. SCE further recommends that the Commission hold the PD, if needed, until it has reviewed and considered the Utilities’ respective EPIC Benefits Reports.

III.

CONCLUSION

SCE appreciates the opportunity to provide comments on the Phase 1 PD. SCE urges the PD be modified to reinstate the Utilities’ longstanding role as EPIC Administrators as part of Phase 1 of this rulemaking. SCE also asks that the Commission give the Utilities a reasonable and fair opportunity to demonstrate their compliance with the Commission-approved joint Utilities’ RAP application. This would include incorporating SCE’s recommendations for program evaluations for Phase 2 of this rulemaking, as described above and as listed in Appendix

³⁵ D.20-02-003, at p. 21.

³⁶ Please see Appendix B to these comments, which is SCE’s proposed template for the Benefits Report, as well as one illustrative example.

A to these comments. SCE welcomes further opportunities to collaborate with stakeholders, including the CEC, so that the EPIC program can continue to provide meaningful benefits to our customers and communities and help us make the right choices for California's energy future. If needed, the Commission should place a hold on the proposed decision to have the time it needs to consider SCE's recommendations.

Respectfully submitted,

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Appendix A

SCE's Proposed Modifications to Findings, Conclusions, and Orders

SCE'S PROPOSED MODIFICATIONS TO FINDINGS, CONCLUSIONS AND ORDERS

Reference	Proposed Modification
Page 26, New Finding of Fact	Finding of Fact 6: There is evidence that the utilities' administration of the EPIC Program will likely continue to result in quantifiable benefits to ratepayers. Utilities are a direct path to market for the deployment of EPIC technologies. Utilities are a direct path to market for the deployment of EPIC technologies.
Page 26, New Finding of Fact	Finding of Fact 7: In Decision 20-02-003, the Commission approved the joint utility Research Administration Plan Application, which details each utility's approach to addressing specific recommendations from the Evergreen Evaluation Report and Commission Decision 18-10-052. The utilities are implementing the requirements of Decision 18-10-052, but require a reasonable amount of time to demonstrate improvement.
Page 26, New Finding of Fact	Finding of Fact 8: There may be a need to approve bridge funding for the utilities to ensure project continuity and continued support of the EPIC, including participation in the Policy + Innovation Coordination Group.
Page 26, New Finding of Fact	Finding of Fact 9: To support their customers and reduce rate impacts in light of the COVID-19 emergency, SCE proposed a voluntary cut of its program budget of between 10% and 20% until such time that such a reduction is no longer necessary. This will be revisited after any bridge funding has been exhausted.
Page 26, New Conclusion of Law	Conclusion of Law 7: Consistent with existing practice, once approved, the IOUs will follow previous Commission direction in executing their investment plans.
Page 26, New Conclusion of Law	Conclusion of Law 8: Energy Division will lead an assessment of the Utilities' EPIC III projects to determine compliance with

Reference	Proposed Modification
	Commission Decision 20-02-003 (Research Administration Plan Application).
Page 27, Revised Ordering Paragraph 3	Ordering Paragraph 3: The California Energy Commission shall have an annual Electric Program Investment Charge budget of \$147.26 million and the utilities shall have a shared annual Electric Program Investment Charge budget of \$36.82 million, with the ability to propose to adjust its budget for its 2026-2030 investment plan by the rate of inflation.
Page 27, Revised Ordering Paragraph 5	Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E), and Southern California Edison Company (SCE) shall collect funding for the Electric Program Investment Charge (EPIC) in the total amount of \$185 million annually beginning January 1, 2021 and continuing through December 31, 2030, unless otherwise ordered or adjusted in the future by the Commission. The total collection amount shall be adjusted on January 1, 2026 commensurate with the average change in the Consumer Price Index, specifically the Consumer Price Index for Urban Wage Earners and Clerical Workers for the third quarter, for the previous three years. No later than 30 days after the effective date of this decision, PG&E, SDG&E, and SCE shall each file a Tier 1 Advice Letter modifying their tariff sheets to reflect the EPIC surcharge in accordance with this decision and to authorize them to record authorized EPIC budgets and expenditures and to collect the EPIC funds through December 31, 2030 or as otherwise authorized by the Commission.
Page 28, Revised Ordering Paragraph 7	The California Energy Commission and the utilities shall file their Electric Program Investment Charge (EPIC) 4 and EPIC 5 investment plans as applications for Commission consideration on October 1, 2021 and October 1, 2025, respectively. Those applications shall be served on the service list

Reference	Proposed Modification
	for this proceeding and the service lists for each utility's pending or most recent general rate case.

Appendix B

Proposed Template for Benefits Report and Illustrative Example

[Provide introduction and overview, including major highlights of substantial quantified benefits, standards influenced, etc.]

Project	Market Products Influenced	Industry Standards Informed ¹	GRC Capital Requested	Benefits ²			
				Increase Safety ³	Improve Reliability	Reduce Costs	Complementary Benefits
EPIC I							
1. Integrated Grid Project		✓	✓	✓	✓ <i>Quantified</i>		✓
2. Portable End-to-End Test System							
3. Superconducting Transformer Demo							
4. Dynamic Line Rating Demo							
5. Volt/VAR Control of SCE Transmission System							
6. Distribution Planning Tool							
7. Wide-Area Reliability Management & Control							
8. SA-3 Phase III Demo			Table to be completed for EPIC Benefits Report				
9. State Estimation Using Phasor Measurement Technologies							
10. Beyond the Meter: Customer Device Communications							
11. Distributed Optimized Storage							
12. Outage Management and Customer Voltage Data Analytics Demo							
13. Enhanced Infrastructure Technology Evaluation							
14. Regulatory Mandates: Submetering Enablement							
15. Cyber-Intrusion Auto-Response and Policy Management System							
16. Next-Generation Distribution Automation							

Table to be completed for EPIC Benefits Report

¹ SCE plans to interpret Industry Standards Informed to include electric utility industry standards (e.g., IEC, IEEE, etc.), regulatory requirements, and internal SCE standards.

² The benefits summarized within this table are consistent with D.12-05-037, Ordering Paragraph 2, which states “The primary and mandatory guiding principle of the Electric Program Investment Charge shall be to provide electricity ratepayer benefits, defined as promoting greater reliability, lower costs, and increased safety, with the following complementary guiding principles: a. Societal benefits; b. Greenhouse gas emissions mitigation and adaptation in the electricity sector at the lowest possible cost; c. The loading order; d. Low-emission vehicles/transportation; e. Economic development; and f. Efficient use of ratepayer monies.”

³ SCE plans to interpret the Increase Safety category to include worker and public safety, resiliency, as well as physical and cybersecurity.

The following entry for the Integrated Grid Project represents an illustrative and partially complete example of what SCE proposes for this document.

1. Integrated Grid Project (IGP)

The IGP demonstrated the next generation grid infrastructure necessary to manage, operate, and optimize the grid with high penetrations of distributed energy resources.

Standards Influenced: The project provided the foundation and architecture for SCE's Grid Modernization program as well as DRP Demonstrations C, D and E, which has helped to inform California's approach to integrating DERs into the planning process for California's investor-owned utilities. The architecture included an Operational Service Bus (OSB) to facilitate a system of systems approach for a future production environment where new applications could be integrated using a common framework. This approach could lay the foundation to integrate with both new and legacy systems. The project identified the vendor maturity for Distributed Energy Resource Management System (DERMS) functionality, FAN radio architecture and communications with 3rd parties.

GRC Capital Request: The IGP directly informed SCE's Grid Management System (GMS) capital project, which was included in SCE's 2018 and 2021 GRC requests. SCE used all the technical requirements developed for the IGP GMS and included them in the set of GMS requirements. SCE also included the IGP architecture within the requirements included in the GMS RFP. A key GMS function is Fault Location, Isolation and Service Restoration (FLISR). The IGP included a lab demonstration of a DERMS solution. This project resulted in lessons that substantially informed development of SCE's technical requirements for the DERMS being deployed on SCE's production system as part of the GMS deployment.

Benefits:

A. Increase Safety

The GMS will enable advanced grid management capabilities that will reduce the number of customers impacted by outages, outage frequency, and outage duration. This means that SCE customers responsible for maintaining the safety, security and health of those living in SCE's service territory will experience fewer and shorter periods without electric service. The architecture developed through IGP will enable the GMS to implement an application for identifying downed energized conductors, allowing SCE to de-energize the impacted circuit segments more quickly, thereby reducing potential safety and wildfire ignition hazards.

B. Improve Reliability

SCE forecasts that GMS FLISR will help SCE customers avoid approximately **300 million CMI** by 2030, an estimated value to customers of **\$471 million**. SCE forecasts that the DERMS will provide **\$134 million** in reliability benefits by 2030 based on its ability to help resolve "masked load" concerns associated with DERs.

C. Complementary Benefits

The GMS will include DER management capabilities that enable integration of DERs into SCE's grid and enable them to provide grid services. This will support California's clean energy policy targets and empower customers to more fully realize the benefits of their investments.

2. **Portable End-to-End Test System**

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

A. **Increase Safety** [include description here.]

B. **Improve Reliability** [include description here.]

C. **Reduce Costs** [include description here.]

D. **Complementary Benefits** [include description here.]

3. **Superconducting Transformer Demo**

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

A. **Increase Safety** [include description here.]

B. **Improve Reliability** [include description here.]

C. **Reduce Costs** [include description here.]

D. **Complementary Benefits** [include description here.]

4. **Dynamic Line Rating Demo**

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

- A. **Increase Safety** [include description here.]
- B. **Improve Reliability** [include description here.]
- C. **Reduce Costs** [include description here.]
- D. **Complementary Benefits** [include description here.]

5. **Volt/VAR Control of SCE Transmission System**

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

- A. **Increase Safety** [include description here.]
- B. **Improve Reliability** [include description here.]
- C. **Reduce Costs** [include description here.]
- D. **Complementary Benefits** [include description here.]

6. **Distribution Planning Tool**

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

- A. **Increase Safety** [include description here.]
- B. **Improve Reliability** [include description here.]
- C. **Reduce Costs** [include description here.]
- D. **Complementary Benefits** [include description here.]

7. **Wide-Area Reliability Management & Control**

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

- A. **Increase Safety** [include description here.]
- B. **Improve Reliability** [include description here.]
- C. **Reduce Costs** [include description here.]
- D. **Complementary Benefits** [include description here.]

8. **SA-3 Phase III Demo**

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

- A. **Increase Safety** [include description here.]

- B. **Improve Reliability** [include description here.]
- C. **Reduce Costs** [include description here.]
- D. **Complementary Benefits** [include description here.]

9. State Estimation Using Phasor Measurement Technologies

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

- A. **Increase Safety** [include description here.]
- B. **Improve Reliability** [include description here.]
- C. **Reduce Costs** [include description here.]
- D. **Complementary Benefits** [include description here.]

10. Beyond the Meter: Customer Device Communications

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

- A. **Increase Safety** [include description here.]
- B. **Improve Reliability** [include description here.]
- C. **Reduce Costs** [include description here.]
- D. **Complementary Benefits** [include description here.]

11. Distributed Optimized Storage (DOS)

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

A. **Increase Safety** [include description here.]

B. **Improve Reliability** [include description here.]

C. **Reduce Costs** [include description here.]

D. **Complementary Benefits** [include description here.]

12. Outage Management and Customer Voltage Data Analytics Demonstration

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

A. **Increase Safety** [include description here.]

B. **Improve Reliability** [include description here.]

C. **Reduce Costs** [include description here.]

D. **Complementary Benefits** [include description here.]

13. Enhanced Infrastructure Technology Evaluation

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

A. **Increase Safety** [include description here.]

B. **Improve Reliability** [include description here.]

C. **Reduce Costs** [include description here.]

D. **Complementary Benefits** [include description here.]

14. Regulatory Mandates: Submetering Enablement Demonstration

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

A. **Increase Safety** [include description here.]

B. **Improve Reliability** [include description here.]

C. **Reduce Costs** [include description here.]

D. **Complementary Benefits** [include description here.]

15. Cyber-Intrusion Auto-Response and Policy Management Systems (CAPMS)

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

- A. **Increase Safety** [include description here.]
- B. **Improve Reliability** [include description here.]
- C. **Reduce Costs** [include description here.]
- D. **Complementary Benefits** [include description here.]

16. **Next-Generation Distribution Automation**

[Insert high level narrative description of what the project consisted of (2-5 sentences).]

Market Influence: [Insert description of how the project influenced the market development of related product offerings.]

Standards Influence: [Insert narrative description of how the project informed and influenced industry standards (identify which standards and which forums/channels for influence).]

GRC Capital Request: [Identify any GRC capital requests that resulted from the project (year, volume, amount).]

Benefits: [Identify and describe any customer benefits that resulted from the project (either directly or indirectly due to the project's influence on an associated capital project). To the extent benefits have been quantified, include them here.]

- A. **Increase Safety** [include description here.]
- B. **Improve Reliability** [include description here.]
- C. **Reduce Costs** [include description here.]
- D. **Complementary Benefits** [include description here.]