FINAL PARTNERSHIP AREAS

POLICY+INNOVATION COORDINATION GROUP
CALIFORNIA EPIC PROGRAM

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PREPARED BY

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FOR THE CALIFORNIA PUBLIC UTILITIES COMMISSION

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PARTNERSHIP AREA SELECTION

The California Public Utilities Commission (CPUC) is launching the second phase of the Policy+Innovation Coordination Group, its effort to better connect ratepayer-funded energy Research, Development & Deployment (RD&D) programs with current and emerging policy issues facing the Commission. In the second phase, the CPUC has selected four Partnership Areas where RD&D projects funded through the CPUC's EPIC Program could better coordinate to accelerate innovation, and create a positive feedback loop between the State's electricity RD&D efforts and emerging energy policy challenges. The Partnership Areas are critical and timely for decision-making for 2020.

To facilitate productive input, the Policy+Innovation Coordination Group will establish workstreams for each Partnership Area to allow RD&D project leaders and stakeholders to share their direct experience in RD&D projects, identify policy obstacles to new and emerging technology adoption, help inform ongoing and upcoming Commission proceedings and other policy deliberations, and create new collaborations to accelerate energy innovation. This document describes the key questions around which the Partnership Areas will be organized, the background of the Policy+Innovation Coordination Group effort, and the plan for workstreams in Fall 2020. Those that are interested in participating can register for a workstream at the CPUC's Policy+Innovation Coordination Group Web site: **www.EPICPartnership.org**.

POLICY+INNOVATION COORDINATION GROUP PARTNERSHIP AREAS FOR 2020

EQUITY	WILDFIRE MITIGATION	TRANSPORTATION ELECTRIFICATION	PUBLIC SAFETY POWER SHUTOFFS
How can we ensure that the transition to clean energy is equitable?	How do we develop new tools to prioritize and weigh wildfire mitigation investments?	How can transportation electrification support grid reliability and promote grid decarbonization?	How do we minimize social and economic disruptions of public safety power shutoffs for the most critical public services and the most vulnerable communities?

BACKGROUND

CALIFORNIA'S ELECTRIC PROGRAM INVESTMENT CHARGE

California's Electric Program Investment Charge (EPIC) supports the development of new, emerging, and non-commercialized clean energy technologies in California. These projects must be designed to produce electricity ratepayer benefits in the form of increased reliability, improved safety, and/or reduced electricity costs.

The CPUC oversees and monitors the implementation of the ratepayer-funded EPIC program. For current EPIC investment periods 1, 2, and 3, there are four program administrators: the California Energy Commission (CEC), which administers 80% of EPIC funds, Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E), which together administer the remaining 20% of EPIC funds.

POLICY+INNOVATION COORDINATION GROUP

In Decisions 18-01-008 and 18-10-052, the CPUC established the Policy+Innovation Coordination Group to increase the alignment of California's EPIC program investments and program execution with California Public Utilities Commission and California energy policy needs through increased coordination among program administrators and between program administrators and the CPUC.

The PICG is dedicated to (1) the technical, complex coordination task of identifying timely opportunities for substantive feedback and coordination among EPIC investments and California's energy innovation needs and goals, and (2) providing the support functions to allow this feedback and coordination to occur effectively. The PICG does not provide any formal direction or binding guidance to administrators regarding which projects they should fund. Further, this effort is aimed at coordination in the near term, where the CPUC has already approved most projects or project areas.

The PICG is made up of a) the Project Coordinator, b) one representative from each EPIC administrator at the program management/leadership level (i.e. Commissioner and/or Division Director/Deputy for the CEC; senior leadership level with oversight over EPIC and innovation projects for the IOUs), and c) CPUC staff and Commissioners.

The Project Coordinator, The Accelerate Group and its partner 2R Group, is primarily responsible for creating an environment for coordination between the CPUC's energy policy and planning needs, and the energy RD&D supported by EPIC funding. As the dedicated entity that provides support for improved coordination, the Project Coordinator is organizing and facilitating PICG activities and produce deliverables and activities. This arrangement allows members of the group to focus on substantive input and creating meaningful dialogue.

PARTNERSHIP AREA SELECTION PROCESS

Policy+Innovation Partnership Areas are issue areas of common interest and substantive opportunity, around which the PICG will engage in targeted coordination. The PICG went through a process in 2020 to identify a set of 3-5 Partnership Areas where targeted coordination can be most effective.

Based on interviews with the PICG members, CPUC and CEC staff and Commissioners, and in-depth background research, the Project Coordinator presented an initial set of possible Partnership Areas to the PICG in April 2020, identifying where there are significant opportunities for coordination among EPIC projects working on the same, similar, or related energy policy and technology challenges, and/or where input into California Public Utilities Commission proceedings or other energy policy issues would be timely and relevant.

The PICG, including CPUC Commissioners and staff, CEC Commissioners and staff, and the utility EPIC Program Administrators provided comment and feedback on the initial set of 12 possible Partnership Areas, focusing on which topics would be the most "ripe" and "timely" to engage on for the remainder of calendar year 2020. The recommendations from the PICG members were provided to the CPUC Energy Division. Based on recommendations from the PICG members, the CPUC Energy Division selected the final four Partnership Areas for 2020.

WHAT WILL THE POLICY+INNOVATION PARTNERSHIP AREAS BE USED FOR?

Starting in September 2020, the PICG will kick-off a set of four workstreams, one for each of the Partnership Areas. The workstreams will be focused on gathering input and lessons learned from EPIC projects and stakeholders on core policy challenges, encouraging enhanced coordination, supporting knowledge-sharing, and convening public meetings on each topic.

The PICG will also work to support the enhancement of EPIC project data transparency, compiling project lessons learned, data, and results from all project administrators into a central online location.

Additionally, the PICG will host an annual Policy+Innovation Forum, with the first one to take place after the conclusion of the workstreams, which is currently projected to be between December 2020 and February 2021. A second annual forum is projected to take place in September - October 2021. These fora will provide an opportunity for PICG Workstream participants to present Partnership Area and database design updates to stakeholders and community members.

1 HOW CAN WE ENSURE THE TRANSITION TO CLEAN ENERGY IS EQUITABLE?

BACKGROUND AND DESCRIPTION

Equity is important in the process of developing and implementing EPIC and other energy programs. Program implementers face obstacles in understanding what disadvantaged communities actually need from a clean energy research, development & demonstration effort. This gap leads to difficulty in developing innovative research, development & demonstration projects that aren't just located in DACs and low-income communities, but actually work to overcome access and equity barriers in these communities. As our electric grid continues to transform and evolve, it is critical to consider the implications of new technologies and policies on disadvantaged communities.

The electric grid is complex and ever-changing, and so are community needs across California. It is imperative that we advance our energy economy in a way that is equitable and most effective for our diverse community needs. Inclusive energy program design will help us design the right energy programs and infrastructure for Californians while ensuring that low-income families are not left behind.

This Partnership Area seeks to bring stakeholders together to discuss and identify critical gaps for DACs/low-income communities within EPIC project design and develop a plan of action to increase transparency, community involvement and knowledge transfer. This initiative will also focus on bringing together all EPIC project participants who have worked with DACs/low-income communities to discuss areas for collaboration and present opportunities for inclusive program design to other program participants. This Partnership Area will aim to drastically improve the dialogue and leverage existing community knowledge for understanding critical differences and similarities in our California communities and how to empower them, and how to maximize community benefit.

POTENTIAL KEY QUESTIONS FOR DISCUSSION

Q Engagement: What are effective ways for researchers or program implementers to understand the specific needs and strengths of communities?

- Who do communities trust? How do trusted messengers convey information to and about the community?
- What resources and technical assistance do community organizations need to engage?
- What technical assistance and support would be helpful?
- What aspects of an RD&D project do community members and community-based organizations want to be involved in?

Q Understanding Challenges: What technical and financial challenges are more significant in DACs or Low-Income communities?

- What challenges do low-income homeowners face in adopting clean energy technology?
- What challenges rental and multi-family properties face?
- What challenges do businesses in DAC and low-income communities face?
- What are the intersections with public and personal health and safety?

Q Lessons Learned: What have we learned from previous efforts with DACs or Low Income Communities?

- What aspects made them successful? Or why did they fail?
- What EPIC project challenges are still unresolved?

Q Moving Forward: How do we solve these challenges?

- Who may be missing from the discussion and how can we go to them so they are included?
- What structures can be put in place to empower communities to identify their specific community needs, and enable EPIC program investments and projects to address those needs?
- How can we leverage existing financing programs to help DACs/Low-Income communities access clean energy?

2 HOW DO WE DEVELOP NEW TOOLS TO PRIORITIZE AND WEIGH WILDFIRE MITIGATION INVESTMENTS?

BACKGROUND AND DESCRIPTION

In recent years, California has faced dangers and devastation from catastrophic wildfires caused by the failure of electric utility infrastructure, as well as increased costs to ratepayers resulting from electric utilities' exposure to financial liability.

The threat of wildfires is likely to expand as the impacts of climate change create a greater frequency of conditions for fire ignition and spread. The solutions to mitigate and prevent electric equipment from igniting fires are costly, and have unknown track records. As the CPUC evaluates and implements Wildfire Mitigation plans, understanding the types, trends, and trade-offs of solution sets are essential for prioritizing asset investments and understanding the costs-benefit of alternatives.

This Partnership Area will leverage the work of EPIC projects to gain better access to data and modeling to understand wildfire ignition risk and spread risk, to understanding the impact of climate change on that risk, and to understand the wide range of solutions that may be leveraged to most cost-effectively mitigate wildfires and related events.

POTENTIAL KEY QUESTIONS FOR DISCUSSION

Q How can we create transparency in utility asset management schedules and asset management planning?
- What methods are used to calculate risk spend efficiency?
- How can point in time decision making around asset hardening and asset management be improved?
- How do we best model future grid topography?

Q What are emerging fire prevention technologies and what are they intended for?
- What technologies or assets management strategies could measurably reduce the risk of a fault becoming an ignition?
- How do we get wildfire mitigation technology from RD&D to commercialization and incorporated into daily operations?

Q What models and forecasting tools do we need, but are not available or readily used today?

Q How are DACs and Low-Income community-specific needs incorporated into the wildfire prevention and asset management strategies?

TIMELINESS

- R.18-10-007, the Utility 2020 Wildfire Mitigation Plans, were submitted on 2/7/2020 for a 3-year cycle for review by the CPUC's Wildfire Safety Division. At the CPUC's June 2020 meeting, the CPUC approved the electric utilities' plans with additional conditions utilities must meet.

- The Wildfire Safety Division will conduct an annual re-evaluation of each utility's maturity compared against their projected maturity using the Utility Wildfire Mitigation Maturity Model.

3 HOW CAN TRANSPORTATION ELECTRIFICATION SUPPORT GRID RELIABILITY AND PROMOTE GRID DECARBONIZATION?

BACKGROUND AND DESCRIPTION

California has ambitious goals to deploy five million zero emission vehicles by 2030. Policy-makers have tasked state agencies with ensuring there is enough charging infrastructure to support these light-, medium- and heavy-duty vehicles and off-road equipment. California also aims to maximize the benefits of transportation electrification through vehicle-grid integration strategies that provide value to the grid, ratepayers, and electric vehicles drivers.

If done poorly, rapid electrification of transportation can create large new loads that could strain the electric grid, and exacerbate peak demands. If done well, the new capabilities of widespread transportation electrification can be a tool to help address the intermittency and imbalance issues that come with the growing deployment of renewable energy, provide additional resiliency and reliability support for the grid, better utilize grid resources, and drive down rates for all customers. In particular, medium- and heavy-duty vehicle charging infrastructure, supporting school buses, delivery and goods, and fleets, face particular challenges for grid planning, given the impacts of their high-density and high-capacity charging needs. Solving those challenges is critical because on-road heavy trucks and buses, and off-road vehicles, account for 68% of nitrogen oxide emissions and 91 percent of diesel particulate matter emissions in California. These emissions disproportionately impact Disadvantaged Communities.

This Partnership Area will bring together RD&D efforts working on transportation electrification and vehicle-grid integration issues, as well as utility planning efforts, to accelerate innovation in the adoption, integration, and optimization of medium- and heavy- duty electric vehicle charging. This effort will focus on vehicle-grid communication and planning, and will aims to identify strategies to best mitigate the impact of widespread medium- and heavy-duty vehicle charging on the distribution system, particularly in areas where accelerated electrification can reduce emissions impacting environmental justice communities. This Partnership Area will focus on supporting the RD&D needs identified by the interagency Vehicle Grid Integration Working Group.

TRANSPORTATION ELECTRIFICATION

POTENTIAL KEY QUESTIONS FOR DISCUSSION

Q How can we leverage and support the work of the interagency Vehicle-Grid Integration (VGI) Working Group?

- How can EPIC respond to critical RD&D gaps that have been identified as barriers to deployment of VGI strategies?
- Where has VGI successfully, or unsuccessfully, been implemented?
- What are the lessons learned?
- What feedback can be gained from existing EPIC projects to improve or evaluate the feasibility and/or cost-effectiveness of identified VGI strategies?

Q How can we encourage medium-/heavy-duty electric vehicle fleet deployments while mitigating grid impacts?

- What communities across the state are most impacted by medium-/heavy-duty emissions?
- Are existing methods adequate to quantify benefits for environmental justice communities?
- How do we appropriately incentivize large fleets to electrify?
- How can we develop a consistent charging standard for medium-/heavy-duty vehicles?

TIMELINESS

- SB 676 implementation guidance, including identification of strategies to fill R&D gaps, due December 31, 2020.
- Order Instituting Rulemaking to Continue the Development of Rates and Infrastructure for Vehicle Electrification (Opening Comments on Equity, Rates, Cost Recovery, Alternative Financing, Partnerships, VGI, ME&O, and Emerging Trends) due August 2020, and final Transportation Electrification Framework due December 2020.
- SB44 CARB Mobile Source Strategy update focused on reduced emissions from Medium-/Heavy-duty and off-road fleets due January 2021.

4 HOW DO WE MINIMIZE SOCIAL AND ECONOMIC DISRUPTIONS OF PUBLIC SAFETY POWER SHUTOFFS FOR THE MOST CRITICAL PUBLIC SERVICES AND THE MOST VULNERABLE COMMUNITIES?

BACKGROUND AND DESCRIPTION

As a result of Resolution ESRB-8, the electric utilities developed de-energization programs, referred to as "Public Safety Power Shutoffs" (PSPS). PSPS are a preventative measure of last resort if the utility reasonably believes that there is an imminent and significant risk that strong winds may result in vegetation contact with power lines, leading to increased risk of fire. These power shutoff events cause significant disruption to residents, businesses, and critical services, particularly in areas that are served by transmission infrastructure that runs through high-fire risk areas.

While utilities are submitting wildfire mitigation plans, and are accountable for de-energization programs, there is difficulty identifying critical local infrastructure and understanding the impacts of power shutoffs on critical public services and vulnerable populations. Further, there are lessons that could be learned from previous grid modernization investments that have been made, or that could be made, to mitigate and prepare for a future of growing and more impactful wildfire and other public safety high-impact threats.

This Partnership Area seeks to operate on two tracks: first, to identify priority areas in communities where resiliency can be best supported and, second, to leverage lessons learned from EPIC projects focused on grid hardening, sectionalization, sensors, monitoring, grid controls and distribution automation, and seek to bring together researchers and community stakeholders to identify solutions that can best be utilized to minimize or mitigate power shutoffs.

POTENTIAL KEY QUESTIONS FOR DISCUSSION

Q What strategies can best mitigate the impacts of power shutoff events on resources and services communities need the most?

- What were the social and economic disruptions of wildfires or prior PSPS events?
- What lessons have been learned from PSPS events?
- What are priority areas in communities, particularly in vulnerable communities, where resiliency can be best supported?
- How can more real-time information on shutoff events be shared with critical public service providers and communities?

Q Which can we learn from previous grid modernization investments that could share insights into minimizing disruptions from PSPS events?

- What sensors or situational awareness tools could be used to reduce the frequency, duration, and geographic scope of shutoffs?
- What can grid modernization strategies and technologies teach us about what works and what doesn't work?
- How can future grid designs and operating strategies address the growing and more impactful threat of power shutoffs from disasters?

WORKSTREAMS

The Policy+Innovation Coordination Group will launch four concurrent workstreams, one for each Partnership Area, to bring together RD&D leaders and other stakeholders around the core questions posed by the selected Partnership Areas. Participants in the workstreams will share their direct experience in ongoing EPIC research, development, and deployment projects. Workstreams will explore policy obstacles to new and emerging technology adoption, help inform ongoing and upcoming CPUC proceedings, and create new collaborations across research projects to accelerate energy innovation.

WHO SHOULD JOIN?

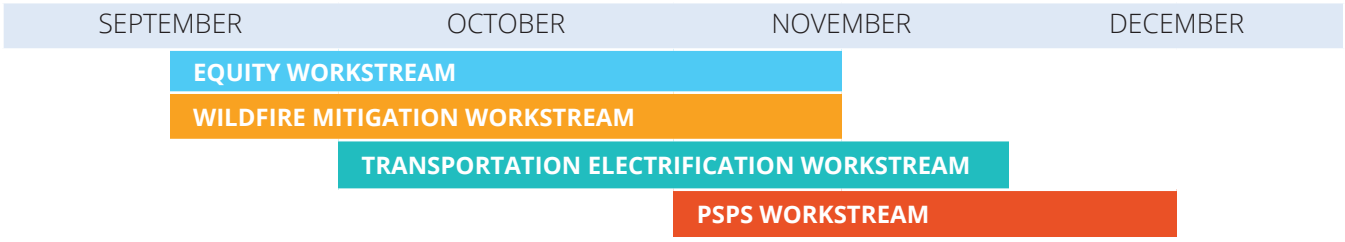
Anyone interested in sharing lessons learned or insights from RD&D projects are encouraged to register to participate in the workstream of their choice at www.EPICPartnership.org. The Project Coordinator will reach out to community organizations and representatives from Disadvantaged Communities to recruit stakeholders that can share insights on what has worked and what has not on efforts to ensure equity in clean energy work. The Project Coordinator will also work with the EPIC Program Administrators to recruit EPIC project leaders whose insights may be particularly relevant to the Partnership Area to present and share data on the topic.

PROJECT COORDINATOR ROLE

The Project Coordinator will schedule workstream meetings, recruit stakeholders and other interested parties to register and attend, establish agendas, identify speakers and presenters, manage the flow of the meetings, keep meetings records and notes, and support the development of any workstream output needs, such as final reports or action plans.

TENTATIVE WORKSTREAM SCHEDULE

Workstreams will consist of three meetings per Partnership Area, beginning in September 2020.



Register for a workstream online at **www.EPICPartnership.org.**

PRELIMINARY AGENDAS

EQUITY

How can we ensure that the transition to clean energy is equitable?

PRELIMINARY MEETING SCHEDULE

WORKSTREAM KICK-OFF & GOAL SETTING

At the initial workstream meeting, participants will identify critical gaps in ensuring equitable access to clean energy and establish goals for the workstream.

GATHERING LESSONS LEARNED FROM DISADVANTAGED COMMUNITY EFFORTS

Workstream participants will gain lessons learned from previous efforts on inclusive program design, and start working on a framework for increasing transparency, community involvement, and knowledge transfer in RD&D project design.

COORDINATION

With support from the Project Coordinator, workstream members will work to finalize a framework for equitable engagement and project design, and identify opportunities for coordination with EPIC projects.

WILDFIRE MITIGATION

How do we develop new tools to prioritize and weigh wildfire mitigation investments?

PRELIMINARY MEETING SCHEDULE

WORKSTREAM KICK-OFF & LESSONS LEARNED

At the initial Workstream meeting, EPIC projects will share lessons learned from research, data analysis, and modeling for ignition risk and spread risk.

IDENTIFYING EMERGING TECHNOLOGY

Workstream participants will have an opportunity to present new technology concepts and innovative options for mitigating wildfire risk, and the comparative cost and effectiveness vs. existing options.

IDENTIFYING EMERGING TECHNOLOGY PT. 2

Workstream participants will continue presentations and discussions of new technology concepts and innovative options for mitigating wildfire risk, and the comparative cost and effectiveness vs. existing options.

TRANSPORTATION ELECTRIFICATION

How can transportation electrification support grid reliability and promote grid decarbonization?

PRELIMINARY MEETING SCHEDULE

WORKSTREAM KICK-OFF & COORDINATION

At the initial Workstream meeting, participants meet with representatives of the interagency Vehicle-Grid Integration (VGI) Working Group to identify where EPIC can respond to critical RD&D gaps that have been identified as barriers to deployment of VGI strategies.

GATHERING LESSONS LEARNED FROM MEDIUM- AND HEAVY-DUTY CHARGING

Workstream members will share lessons learned from previous RD&D and pilot work on medium- and heavy-duty charging, including fleet charging, and strategies to reduce the grid impact of high-capacity charging.

COLLABORATION

Workstream members will work to identify opportunities for collaborations and ways to accelerate new VGI technology deployment on the grid.

PUBLIC SAFETY POWER SHUTOFFS

How do we minimize social and economic disruptions of public safety power shutoffs for the most critical public services and the most vulnerable communities?

PRELIMINARY MEETING SCHEDULE

WORKSTREAM KICK-OFF & PRIORITIZATION

At the initial Workstream meeting, participants will share methods for identifying critical public services and vulnerable populations.

GATHERING LESSONS LEARNED FROM GRID MODERNIZATION EFFORTS

Workstream members will have an opportunity to present lessons learned from previous RD&D work and deployments of grid modernization investments that are directly applicable to public safety power shutoff events.

COLLABORATION

Workstream members will work to identify opportunities for collaborations and ways to accelerate new grid modernization technology deployment.

APPENDIX: PARTNERSHIP AREAS CONSIDERED

Using the input from the Policy+Innovation Coordination Group members on areas that were timely, critical, and where enhanced coordination could accelerate outcomes, the Project Coordinator compiled an initial list of 12 Draft Partnership Areas and presented them to the Policy+Innovation Coordination Group in April 2020. Policy+Innovation Coordination Group members, as well as meeting participants, provided feedback on both the content and the selection of the Draft Partnership Areas in April and May 2020. The original core question / topic area for each of the original proposed Partnership Areas are below for reference:

1. HOW CAN WE ENSURE THAT THE TRANSITION TO CLEAN ENERGY IS ALIGNED WITH AND ADDRESSES **DAC/LOW-INCOME CUSTOMER NEEDS**?
2. HOW DO WE DEPLOY **MICROGRIDS** QUICKLY?
3. HOW CAN CALIFORNIA ACCELERATE **LONG-DURATION ENERGY STORAGE** TO MEET THE MARKET NEED IN TIME?
4. HOW DO WE DEVELOP NEW TOOLS TO PRIORITIZE AND WEIGH **WILDFIRE MITIGATION** INVESTMENTS?
5. HOW DO WE PRIORITIZE INVESTMENTS TODAY TO MINIMIZE SOCIAL AND ECONOMIC DISRUPTION OF **PSPS** FOR THE MOST CRITICAL PUBLIC SERVICES AND MOST VULNERABLE?
6. HOW CAN WE ENSURE THE EMERGING **ELECTRIFICATION OF VEHICLES** SUPPORTS, AND DOESN'T HARM AND OVERWHELM, THE ELECTRIC GRID??
7. HOW DO WE OVERCOME MARKET BARRIERS TO **DECARBONIZING CALIFORNIA'S BUILDINGS** ON A LARGE-SCALE?
8. HOW CAN WE BRING TOGETHER ENERGY EFFICIENCY INVESTMENTS AND RD&D EFFORTS TO MOVE THE NEEDLE ON **LOW-INCOME MULTIFAMILY RETROFITS**?
9. WHAT ARE THE NEW ROLES AND SERVICES **DISTRIBUTED ENERGY RESOURCES** CAN PLAY TO SUPPORT THE GRID OF TODAY AND TOMORROW?
10. HOW CAN WE DEPLOY CONSISTENT, TECHNOLOGY-NEUTRAL **PRICE SIGNALS** TO UNLOCK AND OPTIMIZE THE CUSTOMER ROLE IN GRID SERVICES?
11. CAN WE DEPEND ON **GREEN ELECTROLYTIC HYDROGEN** TO SERVE OUR "LAST 20%" OF DECARBONIZATION NEEDS?
12. HOW CAN WE ENSURE THE INVESTMENTS WE ARE MAKING IN THE GRID TODAY PREPARE US FOR THE **CLIMATE REALITY OF TOMORROW**?

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