BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning, and Evaluation of Integrated Distributed Energy Resource.	Rulemaking 14-10-003 (Filed October 2, 2014)

COMMENTS OF THE NATURAL RESOURCES DEFENSE COUNCIL, ENVIRONMENTAL DEFENSE FUND, CLEAN COALITION, AND 350 BAY AREA ON ADMINISTRATIVE LAW JUDGE'S RULING SEEKING RESPONSES TO QUESTIONS AND COMMENT ON STAFF AMENDED PROPOSAL ON SOCIETAL COST TEST

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I. Introduction

Pursuant to Rules 1.9 and 1.10 of the California Public Utilities Commission's ("Commission" or "CPUC") Rules of Practice and Procedure, the Natural Resources Defense Council, Environmental Defense Fund, Clean Coalition, and 350 Bay Area (collectively, "Joint Parties") submit the following response to the "Administrative Law Judge's Ruling Seeking Responses to Questions and Comment on Staff Amended Proposal on Societal Cost Test" ("Ruling") filed on March 14, 2018.[1]

II. Overarching Comments

The Joint Parties appreciate the Commission's efforts to further develop and improve existing Distributed Energy Resources ("DER") cost-effectiveness methodology. The Joint Parties main comments and concerns are:

- While the 2017 SCT Whitepaper correctly concluded that DERs should be evaluated using a societal cost test ("SCT") in accordance with California's legislative priorities,[2] Attachment 1 of the Ruling ("SCT Addendum") incorrectly retreats from that position by

[1] *Administrative Law Judge's Ruling Seeking Responses to Questions and Comment on Staff Amended Proposal on Societal Cost Test,* Order Instituting Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning and Evaluation of Integrated Distributed Energy Resources, R. 14-10-003 (Mar. 14, 2018).

[2] CPUC Energy Division, *Distributed Energy Resources Cost Effectiveness Evaluation: Societal Test, Greenhouse Gas Adder, and Greenhouse Gas Co-Benefits,* Order Instituting Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning and Evaluation of Integrated Distributed Energy Resources, R. 14-10-003 at 5 (Feb. 9, 2017).

proposing the SCT should only be used for information purposes without providing adequate justification; and

- The Commission's proposal to modify existing tests to account for the cost of carbon abatement is necessary and accurate.

These comments are explained in detail in Section III of this document through responses to questions posed by the Commission in the Ruling.

III. Responses to Questions

1. Explain why the Commission should or should not adopt the modified TRC and PAC tests as replacements for the existing TRC and PAC tests.

The Joint Parties recommend that the modified versions of the Total Resource Cost ("TRC") test and the Program Administrator Cost ("PAC") test be adopted by the Commission. Staff propose modifying the existing TRC and PAC by including a cost of carbon abatement,[3] developed in the Integrated Resource Planning ("IRP") proceeding,[4] as a factor in the tests' framework.

Including a cost of carbon abatement to the TRC and PAC is necessary to accurately value demand-side DERs in system planning (through individual DER proceedings, and via the centralized IRP Proceeding[5]) to meet California's greenhouse gas ("GHG") reduction goals. The current IRP analysis places different economic constraints on demand-side resources (primarily DERs) as compared to supply-side resources. As well, the IRP analysis does not recognize supply-side DERs as a distinct category with significant avoided transmission cost value in

[3] *Administrative Law Judge's Ruling Seeking Responses to Questions and Comment on Staff Amended Proposal on Societal Cost Test, Attachment 1- Distributed Energy Resource Cost-Effectiveness Evaluation: Further Recommendations on the Societal Cost Test, An Energy Division Staff Proposal Addendum #2*, Order Instituting Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning and Evaluation of Integrated Distributed Energy Resources, R. 14-10-003 at 7 ("a GHG adder based on the marginal cost of abatement would be the most logical to use for these tests, since it reflects the actual costs that ratepayers will likely incur to meet California's GHG goals, as required by state law").

[4] *Decision Setting Requirements for Load Serving Entities Filing Integrated Resource Plans,* Order Instituting Rulemaking to Develop an Electricity Integrated Resource Planning Framework and to Coordinate and Refine Long-Term Procurement Planning Requirements, R. 16-02-007 at 118, Table 6 (issued Feb. 13, 2018) (Final Decision).

[5] The IRP Proceeding is tasked with developing a cost-effective path to meeting GHG targets, as codified in Public Utilities Code Sections 454.51 and 454.52. *Order Instituting Rulemaking to Develop an Electricity Integrated Resource Planning Framework and to Coordinate and Refine Long-Term Procurement Planning Requirements,* R. 16-02-007 at 2 (issued Feb. 19, 2016).

addition to lower losses. DERs are first required to be cost-effective by themselves to be considered a viable resource in IRP analysis; these DERs are then modeled as fixed inputs that modify system load. Supply-side resources, on the other hand, are not required to be individually cost-effective to be considered in the IRP model. The IRP model selects individual supply-side resources by optimizing for the lowest cost (relative to other supply-side resources) [6] to comply with California's GHG reduction goals and resource adequacy constraints. Including a cost of carbon abatement similar to that derived through this IRP supply-side resource optimization ensures that DERs are evaluated using the same principles as supply-side resources. This ensures that those DERs that aid in the achievement of environmental goals and that are aligned with resource adequacy constraints are prioritized appropriately.

In addition to being a necessary component of cost-benefit analysis, Staff's proposed cost of carbon abatement for demand-side resources, developed through the IRP analysis,[4] is appropriate. This demand-side cost of carbon abatement is determined by linearly interpolating between the 2018 carbon abatement cost applied to develop investor-owned utility ("IOU") energy efficiency goals between 2018-2030,[7] and the 2030 estimate of carbon abatement developed through the IRP proceeding. This demand-side carbon abatement cost is often rightfully higher on average than the IRP-determined cost of carbon abatement for supply-side resources.[8] Staff succinctly explain why a higher cost of carbon abatement for demand-side resources is incorporated in the IRP Reference System Plan:

> *This approach represents a compromise designed to give market and timing certainty to DER providers, while being linked to IRP analysis. We also acknowledge that because most DERs were not optimized intrinsically within RESOLVE but instead were static input assumptions, those assumptions have had an effect on the overall GHG Planning Price outputs discussed above.*
>
> *In addition, mobilizing millions of individual actions in the DER space is inherently more difficult, all other things being equal, than conducting supply solicitations. Thus, we see*

[6] The cost of selected resources in the IRP model informs the cost of carbon abatement. The cost of carbon abatement (per the IRP) for a given year is equal to the difference between (1) the cost of the most expensive supply side resource procured by the IRP model in that year, and (2) the cost of a resource that would be at the cost-effectiveness limit (i.e., its TRC = 1.0) in that same year.

[7] The abatement cost was determined to be equal to the 2018 Cap-and-Trade allowance price containment reserve price. *Decision Adopting Energy Efficiency Goals for 2018-2030,* Order Instituting Rulemaking Concerning Energy Efficiency Rolling Portfolios, Policies, Programs, Evaluation, and Related Issues, R. 13-11-005 at 2 (issued Oct. 2, 2017) (Final Decision).

[8] Depending on the nature of the demand side resource, some examples such as energy efficiency programs, may prove lower than some supply side solicitations.

value in maintaining a higher and smoother curve for a GHG adder to be used in DER cost-effectiveness analyses. [9]

2. Explain why the Commission should or should not also adopt a modified Ratepayer Impact Measure (RIM) test that is modified in the same manner as the TRC and PAC tests.

The Joint Parties recommend that the ratepayer impact measure ("RIM") test be modified in the same manner as the TRC and the PAC to ensure that all three tests value carbon reduction benefits of DERs consistently.

3. Explain why the Commission should or should not adopt the Societal Cost Test as an additional test to be used initially for information purposes only. If the Commission adopts the Societal Cost Test as an additional test, explain why the Commission should or should not then allow each resource proceeding to determine how (if at all) to use the test in decision making.

Staff presented a strong legislative basis[10] for valuing environmental impacts of DERs through the SCT and recommended the SCT as the primary test for DER cost-effectiveness analysis in their 2017 SCT Whitepaper. The SCT Addendum, without providing adequate justification, does not adopt this recommendation and instead proposes that the SCT be used for informational purposes only (if at all).

Given the strong legislative basis for valuing the environmental benefits of DERs, the Joint Parties recommend that the SCT be used as the primary test. Moreover, as the SCT is used successfully in other states[11] and aspects of the SCT are already applied in California,[12] an

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[9] *Decision Setting Requirements for Load Serving Entities Filing Integrated Resource Plans,* Order Instituting Rulemaking to Develop an Electricity Integrated Resource Planning Framework and to Coordinate and Refine Long-Term Procurement Planning Requirements, R. 16-02-007 at 118 (issued Feb. 13, 2018) (Final Decision).

[8] CPUC Energy Division, *Distributed Energy Resources Cost Effectiveness Evaluation: Societal Test, Greenhouse Gas Adder, and Greenhouse Gas Co-Benefits,* Order Instituting Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning and Evaluation of Integrated Distributed Energy Resources, R. 14-10-003 at 2, 7-8 (Feb. 9, 2017).

[11] Arizona, Iowa, Minnesota, Vermont, and District of Columbia all currently apply the SCT. *Comments of Environmental Defense Fund on the Energy Division Staff Proposal,* Order Instituting Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning, and Evaluation of Integrated Distributed Energy Resources, R. 14-10-003 at 3-4, Table 1 (Mar. 23, 2017) (citing American Council for an Energy-Efficiency Economy, State and Local Policy Database: Evaluation, Measurement, & Verification, http://database.aceee.org/state/evaluation-measurement-verification).

[12] Assembly Bill 197 requires California Air Resources Board to "… consider the social costs of the emissions of greenhouse gases, and prioritize…emission reduction rules and regulations that result in direct emission reductions." Assembly Bill 197 (Garcia, 2016), Section 5.

extensive testing period of three years as proposed by staff is not necessary; the SCT can and should be adopted immediately, without a pilot period.

Two additional arguments cut strongly in favor of requiring the use of the SCT as more than informational (or even less adequate, optional). First, the modified TRC does not include the air quality health impacts that AB 3995 mandated in 1990; per that legislation, CPUC cost benefit analyses shall include "a value for any costs and benefits to the environment, including air quality."[13] Second, the next iteration of net energy metering ("NEM") seeks to incorporate the SCT: the 2016 NEM decision explicitly anticipated the need for additional information on the benefits to all customers, stating "[i]t also would require that the Societal Cost Test in the SPM [Standard Practice Manual] be updated, if not substantially revised, to take account of many benefits that have recently increased in societal importance, such as GHG reduction benefits."[14] However, the anticipated 2019 release of this new NEM decision will occur while the SCT pilot contemplated in this decision is ongoing, leaving a possible information gap.[15]

Though significantly less ideal, if the Commission does decide to adopt the SCT as informational only on an interim basis, then the Joint Parties recommend that the CPUC take the following steps at minimum:

- Provide guidance on how the SCT results can be applied to improve current decision-making processes.
- Use the SCT to prioritize spending among those DERs that have similar TRC results.
- Use this proposed three-year test period to determine and make any necessary enhancements to the SCT before permanently adopting it as a primary test for DERs.

4. Explain why the Commission should or should not require all distributed energy resources activities that currently use the TRC and PAC tests to instead use the modified TRC, modified PAC, and Societal Cost tests.

The Commission should require all DER activities that currently use the TRC and PAC to instead use the modified TRC, modified PAC, and SCT, because all DERs should be evaluated

[13] AB 3995 (Sher, 1990).
[14] *Id.* at 59.
[15] *Decision Adopting Successor to Net Energy Metering Tariff,* Order Instituting Rulemaking to Develop a Successor to Existing Net Energy Metering Tariffs Pursuant to Public Utilities Code Section 2827.1, and to Address Other Issues Related to Net Metering, R.14-07-002 at 119 (filed Dec. 12, 2015) (Final Decision) ("...the Commission's review of the NEM successor tariff anticipated to be undertaken in 2019").

consistently with the same cost-effectiveness principles. Joint Parties' response to the first Commission question addresses how the modified tests should be adopted.

> *5. Explain why the Commission should or should not revise its nomenclature such that the value for the greenhouse gas adder used in the modified TRC and PAC tests is referred to as the "avoided cost of carbon abatement" and the greenhouse gas adder value used in the Societal Cost Test is referred to as the "avoided social cost of carbon."*

The Commission should revise its nomenclature as proposed because the Commission's rationale for applying the "avoided cost of carbon abatement" to the TRC and the PAC, and the "avoided social cost of carbon" to the SCT is accurate.

The TRC assesses investments from the point of view of the electric sector (including the ratepayer) and should consider the price that the electric sector is willing to pay[16] to reduce carbon emissions. The "avoided cost of carbon abatement" term correctly describes and values electric sector's willingness to pay at the cost of compliance with the state's GHG reduction policy. The SCT, which assesses investments from a more holistic societal perspective, should account for a broader total estimated cost of GHG emissions; thus, the term "avoided social cost of carbon," given its expanded scope relative to the TRC, is the correct label.[17]

> *6. Explain why the Commission should or should not determine the "avoided cost of carbon abatement" in R.16-02-007. Explain why the Commission should or should not adjust this value in order to avoid double counting.*

The Commission should determine the avoided costs of carbon abatement in the IRP proceeding (R.16-02-007). The IRP is the appropriate forum to determine the "avoided cost of carbon abatement" because it is the only forum where the total cost of complying with California's GHG reduction policies is being considered. As the "avoided cost of carbon

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[16] *Administrative Law Judge's Ruling Seeking Responses to Questions and Comment on Staff Amended Proposal on Societal Cost Test, Attachment 1- Distributed Energy Resource Cost-Effectiveness Evaluation: Further Recommendations on the Societal Cost Test, An Energy Division Staff Proposal Addendum #2*, Order Instituting Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning and Evaluation of Integrated Distributed Energy Resources, R. 14-10-003 at 7 ("as such, it seems logical *to limit these tests to costs that are borne by ratepayers* and the financial, energy related benefits that accrue to ratepayers. *A GHG adder based on the marginal cost of abatement would be the most logical to use for these tests*, since it reflects the actual costs that ratepayers will likely incur to meet California's GHG goals, as required by state law").

[17] *Id.* ("…environmental benefits are received by society when ratepayers consume less carbon-emitting energy, and in turn, if ratepayers do not do so, society will have to bear a greater externality cost. That cost, for greenhouse gases, is the damage cost associated with climate change. *Therefore, Staff is now recommending that the GHG adder used in the SCT be based on the social cost of carbon*") (emphasis added).

abatement" should represent the total costs borne by the electric sector to comply with California GHG reduction policies, care should be taken to ensure that (1) the IRP proceeding has accounted for a complete list of policies (to avoid undercounting), and (2) when applying this value in the IDER proceeding, adjust for any policies that may have already been accounted for (to avoid double counting).

7. Explain why the Commission should or should not adopt the high impact value, developed by the Interagency Working Group on Social Cost of Greenhouse Gases, as the "social cost of carbon."

The Commission should adopt the high impact value developed by the Interagency Working Group on the Social Cost of Greenhouse Gases as the "social cost of carbon" for California. Per the SCT Addendum, the high impact value best represents the climate change impact that California is already encountering.[18] However, the Joint Parties request a clarification - the high impact value of the social cost of carbon presented in Table 1 of the SCT Addendum seems to be incomplete, possibly missing a units digit for the year 2050.[19]

8. Explain why the Commission should or should not adopt a 3 percent discount rate for the Societal Cost Test.

The discount rate must accurately represent the perspective of the test that is being used. That is, if the test is valuing longer term gain to society (which includes all utility customers), the discount rate needs to match the value of an investment in the long term. Along the same lines, government projects – or projects carried out by the private sector that serve the public good – should use a lower discount rate because the focus of these projects is on ensuring future welfare.[20]

Per the 2017 SCT Whitepaper, the US OMB Circular A-94's range of acceptable (analysis based) discount rates for social impact programs is 1% to 3%.[21] This Commission

[18] *Id.* at 12 ("staff believes there is ample evidence that the IWG's [Interagency Working Group] average values do not fully consider the impact of many climate change impacts that California is already encountering. Therefore, we find that the high impact value is the more appropriate and defensible estimate."

[19] The high impact value for social cost of carbon is "$21" for 2050 per Table 1 of the SCT addendum. Based on the high impact social cost of carbon values for the 2040 and 2045, the value for 2050 should be approximately "$211"

[20] Mike Ringer, *Discounting Future Fuel Costs at a Social Discount Rate,* California Energy Commission (Aug. 2008), available at http://www.energy.ca.gov/2008publications/CEC-200-2008-004/CEC-200-2008-004.PDF.

[21] CPUC Energy Division, *Distributed Energy Resources Cost Effectiveness Evaluation: Societal Test,*

research implies that a discount rate of not more than 2% real should be selected (given it is in the middle of the US OMB range; however, the OMB also indicates long-term discount rates should be at the lower end of the range, as exemplified by the 300+ year long term social discount rate of 0.86% adopted by the U.K. Treasury[22]). That being said, the Commission would also be justified in selecting a lower discount rate, including not discounting the impact on future generations at all (a 0% discount rate).

In fact, the appropriate discount rate for impacts at longer time frames (*e.g.,* greater than 30 years as with climate change impacts) should fall at the lower end of that range because any weighted average of possible social discount rates (as used to address uncertainty in the discount rate) over long periods is inevitably dominated by the lowest rates. Thus, the best choice would be the lowest positive real discount rate.[23] Current market-facing discount rate analysis does not correctly assess such long range climate change impacts. Moreover, from an ethical standpoint, the appropriate choice is a 0% real rate, because discounting the utility of future generations relative to current generations is inappropriate. With a non-zero discount rate, the costs incurred by future generations due to current actions will not be completely borne by entities currently in existence.[24] Even if the Commission continues to support a 3% real discount rate at this time in order to be consistent with the California Energy Commission, the Joint Parties nevertheless encourage the Commission to adopt a lower discount rate when they next revise the SCT.

9. Explain why the Commission should or should not use the USEPA COBRA Tool to compute and adopt an Interim Air Quality Adder until a more robust model can be developed. If you believe that another model should be used, explain why and provide a detailed description of how that model should be used instead.

The USEPA COBRA tool is appropriate for screening level analysis and determining

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Greenhouse Gas Adder, and Greenhouse Gas Co-Benefits, Order Instituting Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning and Evaluation of Integrated Distributed Energy Resources, R. 14-10-003 at 14 (Feb. 9, 2017) ("in addition, the U.S. Office of Management and Budget (OMB) recommends that when regulation directly influences private consumption it is pertinent to use a 3 percent discount rate (i.e., the social rate of time preference), and that *when discounting inter-generationally, the discount rate should be between 1 to 3 percent*") (emphasis added).

[22] Joseph Lowe, *Intergenerational wealth transfers and social discounting: Supplementary Green Book Guidance* (Jul. 2008), *available at* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/193938/Green_Book_supplementary_guidance_intergenerational_wealth_transfers_and_social_discounting.pdf.

[23] Office of Management and Budget, *Circular A-4* at 36 (Sep. 17, 2003).

[24] *See, e.g.* John E. Roemer, *The Ethics of Intertemporal Distribution in a Warming Planet,* Environ. Resource Econ 48: 363-390 (Mar. 2011).

whether more detailed analysis of an initiative's emission reduction impact is required.[25] COBRA provides an understanding of the order of magnitude of societal benefits from avoided health impacts due to emission reduction. The Joint Parties recommend that Staff's COBRA analysis results be applied to the SCT now, with Staff considering a more detailed analysis (using BENMap or a similarly detailed tool) to estimate a more accurate value of health impacts from electric sector emission reductions to be included in future updates to the SCT.

> *10. Explain why the Commission should or should not authorize Staff to continue to study and analyze improvements to the distributed energy resources cost-effectiveness framework, including the development of a common resource valuation method, and issue reports on its findings and subsequent proposals. Are there additional improvements that should be considered?*

The Commission should continue to study and analyze improvements to their cost-effectiveness framework until (1) all energy resource cost-effectiveness tests are unambiguously aligned with state legislative priorities and (2) cost-effectiveness tests treat all resources (demand- and supply-side) fairly and adequately. When the Commission achieves these objectives, they will possess an effective common resource valuation method.

Additional factors that the Commission should consider including in the SCT are as follows:

- A comprehensive accounting of the benefits of DERs to the electric sector that includes at minimum locational benefits of DERs (currently being investigated in the Distribution Resources Plan Proceeding), value of grid services such as voltage and frequency regulation, and avoidance of utility scale solar curtailment.
- The GHG impact of fugitive methane emissions from natural gas production and distribution processes;
- The ability of DERs to reduce water use by avoiding marginal thermal generation, thereby reducing the amount of cooling water required by thermal generation plants;[26]
- The ability of DER to avoid the growth of transmission infrastructure spending by mitigating strain and use of existing transmission capacity;

[25] United States Environmental Protection Agency, *User's Manual for the Co-Benefits Risk Assessment (COBRA) Screening Model* at 4 (Jun. 2015); United States Environmental Protection Agency, *Co-Benefits Risk Assessment (COBRA) Health Impact Screening and Mapping Model – Training at the 2017 International Emissions Inventory Conference* at slide 17 (Aug. 15, 2017).

[26] Comments of the Solar Energy Industries Association on Staff Proposal Recommending a Societal Cost Test, Order Instituting Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning, and Evaluation of Integrated Distributed Energy Resources, R. 14-10-003 at 7 (Mar. 23, 2017).

- The ability of DERs to reduce land use impacts of energy production and distribution. In contrast to conventional generation or large-scale, remote renewables, distributed generation has significantly less impact on pristine or arable land because it is typically deployed on existing structures or otherwise already disturbed land, due to higher values on other land types and competing demands for land use near urban centers. Because siting of distribution-connected PV siting is expected to reflect such use of existing built areas, it avoids both the environmental and economic commitment of using new land area or converting existing lands to accommodate new, large-scale deployment.[27]

  In addition, avoided land use impacts extend beyond the generation site and include the land use associated with resource extraction and fuel transportation such as natural gas pipelines,[28] and land used by the transmission lines and access roads required for electricity to reach load when not generated close to the point of use. Each of these impact habitat, land function, aesthetic viewshed value, [29] and property value across many different types of land over long distances, and should be considered in the cost impacts.

[27] Geoff Keith, *et al., The Hidden Costs of Electricity: Comparing the Hidden Costs of Power Generation Fuels,* Synapse Energy Economics, Inc, at 9 (Sep. 19, 2012), http://www.civilsocietyinstitute.org/media/pdfs/091912%20Hidden%20Costs%20of%20Electricity%20report%20FINAL2.pdf.

[28] Vasilis Fthenakis and Hyung Chul Kim, *Land use and electricity generation: A life-cycle analysis,* Renewable and Sustainable Energy Reviews, 1465, 1468 (2009).

[29] A viewshed is commonly understood to refer to the visual attributes of a particular locality.

IV. Conclusion

The Joint Parties appreciate the opportunity to provide these comments on how best to value DERs in a way that aligns with statutory requirements and helps ensure California can meet its climate goals. We look forward to working with CPUC staff and other stakeholders to further develop and work toward a transition to the SCT.

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Respectfully submitted,

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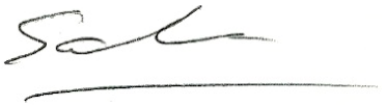

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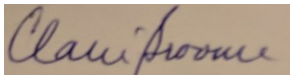

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