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APPENDIX A

SLICE OF DAY RESOURCES

Slice of Day Resources

Resource Adequacy Program

Resource Adequacy Homepage

https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/resource-adequacy-homepage

Slice of Day Implementation Resources

Resource Adequacy History

https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/resource-adequacy-homepage/resource-adequacy-history

Resource Adequacy Compliance

https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/resource-adequacy-homepage/resource-adequacy-compliance-materials

Resource Adequacy Reform Workshop Report

https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M499/K158/499158861.PDF

Dockets

R.23-10-011

https://apps.cpuc.ca.gov/apex/f?p=401:56::::RP,57,RIR:P5_PROCEEDING_SELECT:R2310011

R.21-10-002

https://apps.cpuc.ca.gov/apex/f?p=401:56::::RP,57,RIR:P5_PROCEEDING_SELECT:R2110002

California Energy Commission 2023 Integrated Energy Policy Report Docket

https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2023-integrated-energy-policy-report

Decisions

D.23-04-010 – Decision on Phase 2 of the Resource Adequacy Reform Track

https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M505/K753/505753716.PDF

D.22-06-050 – Decision Adopting Local Capacity Obligations for 2023-2025, Flexible Capacity Obligations for 2023, and Reform Track Framework

https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M488/K540/488540633.PDF

https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M488/K540/488540634.PDF

D.23-06-029 – Decision Adopting Local Capacity Obligations for 2024-2026, Flexible Capacity Obligations for 2024, and Program Refinements

https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M513/K132/513132432.PDF

D.21-07-014 – Decision on Track 3B.2 Issues: Restructure of the Resource Adequacy Program

https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M393/K334/393334426.PDF

APPENDIX B

DECEMBER 22, 2023 INFORMAL COMMENTS

Slice of Day Implementation – Final Round of Informal Comments

In accordance with Decision (D.) 23-04-010, Energy Division Staff ("Staff") solicited informal feedback from parties following several Slice of Day implementation milestones throughout 2023. Prior to submittal of the February 1, 2024 Slice of Day Implementation Report, Staff provide this final opportunity for parties to submit informal comments on the various implementation milestones and subsequent material updates. Additionally, Staff appreciate comments on possible implementation barriers and potential solutions.

Party Name: Alliance for Retail Energy Markets (AReM)

Contact Information: Mary Neal, mnn@mrwassoc.com

1. **Master Resource Database (MRD) –** Staff released the most recent version of the MRD to parties on July 7 and solicited informal comments through July 28. Staff released an updated MRD on October 4.

   Please provide any comments on the most recent version (October 4) of the MRD.

   AReM has no further comments on this topic.

2. **Exceedance Analysis/Profiles –** Staff released its initial exceedance analyses and resulting profiles for wind and solar resources on July 20 and solicited informal comments from parties through August 10. In response to informal comments, Staff released revised exceedance analyses and profiles to parties on October 13; these profiles were included in the October 4 version of the MRD.

   Please provide any comments on the most recent version (October 4) of the wind and solar exceedance analyses/profiles.

   AReM has no further comments on this topic.

3. **Load Serving Entity (LSE) Showing Tool –** Staff released its initial LSE Showing Tool for Slice of Day test filings on August 30 and held a workshop on the tool on September 7. Staff further transmitted updated LSE Showing Tool templates containing LSE RA requirements and allocations on October 6, October 24, and November 9. Additionally, Staff held a series of Office Hours on September 21, October 19, and November 16 for purposes of answering questions regarding LSEs' templates.

   Please provide any comments on the most recent version (November 9) of the LSE Showing Tool.

AReM members have a suggestion to increase the transparency of the tool. Currently, the hourly availability chart and table shows the hourly resource contribution by resource type. The SOD tool does not have a functionality enabling LSEs to identify which resources in their portfolios may have length in given hours without LSEs having to manually make adjustments to their non-storage resource inputs to develop insight into where storage resources may be in excess. The inability for LSEs to have a line of sight into their residual RA positions by resource creates portfolio optimization inefficiencies for LSEs. While we appreciate the residual calculation by storage resource that utilizes the profile optimization, having the added granularity will further enable LSEs to evaluate if there is a more efficient way to meet the requirements given their existing portfolio. If the CPUC could design the tool such that LSEs could see where their individual resources have length, LSEs would be better equipped to make efficient decisions about how to manage their portfolios.

AReM recommends adding a table that shows the hourly resource contribution by contract, meaning each row shown on the "LSE Showing" tab would be reported on an hourly slice basis in a table format. The sum of the rows by resource type would then sum to the values shown in the "Hourly Availability" tab. This would have benefits to LSEs in managing their resource portfolios. For instance, if an LSE is long in slice-of-day RA, the table would show a more immediate indication of the impact to hourly contribution of a contract sale without needing to manually subtract the resource from the tool.

4. **Planning Reserve Margin (PRM) Calibration Tool –** Staff released its initial PRM Calibration Tool on October 24, held a workshop on the tool on October 25, and solicited informal comments

through November 10. Staff released a revised PRM Calibration Tool and resulting PRM on November 17.

Please provide any comments on the most recent version (November 17) of the PRM Calibration Tool and resulting PRM.

AReM has no further comments on this topic.

5. **Load Forecasting Process –** California Energy Commission (CEC) Staff presented on the 2024 Test Year load forecasting process at the September 7 workshop on the LSE Showing Tool. ED Staff included LSEs' Slice of Day Test Year load forecasts in the LSE Showing Tool templates transmitted on October 6, October 24, and November 9. In response to some LSEs' concerns regarding their Slice of Day load forecasts, CEC and ED Staff solicited informal comments on possible adjustments to the load forecasting process adopted in D.23-04-010 for Compliance Year 2025 through December 1.

   Please provide any additional comments on the currently adopted load forecasting process.

AReM again thanks the California Public Utilities Commission ("CPUC") and California Energy Commission ("CEC") Staff for the opportunity to provide informal comments on the 2025 SOD load forecast process. Here, AReM reiterates its previous comments regarding load shape accuracy submitted informally on December 1. Due to the importance of this topic, AReM submits these comments again, such that they can be easily located by Staff.

One AReM member encountered an issue with its load shape for the 2024 SOD test year filings. Specifically, the load shape showed abnormally high demand during the early morning hours, especially hour-ending 6 am, causing that hour to be the hour of peak demand in some calendar months. This is unexpected and does not comport with typical electric service provider ("ESP") load shapes. ESPs serve almost exclusively commercial and industrial loads and have load shapes that peak in the afternoon.

AReM thanks the CPUC and CEC Staff for helping to understand this issue and rectify it within the test year SOD filings. Though AReM does not know what caused the issue, the pro rata load adjustment that increases demands in early morning hours and decreases them in midday hours may be part of the cause.

For SOD compliance filings in 2025 it is imperative that ESPs be provided reasonably accurate load shapes. One of the benefits of the SOD framework rests on the ability for LSEs to shape a capacity resource portfolio to meet their own load shape. If the load shapes are not reflective of

the types of customers that the LSE serves, the exercise results in shifting the costs associated with reliability to the customers of the LSEs with inaccurate load shapes. Significant unexpected changes to the load shape over time will hinder forward resource adequacy ("RA") contracting, something of value in today's tight RA market.

Therefore, AReM recommends the CPUC and CEC thoroughly review the current process and understand all causes of the early-peaking load shapes. Any errors should be corrected prior to generating the 2025 load forecasts. In addition, AReM recommends the schedule should allow load forecasts to be provided to LSEs in draft form as soon as they are available, such that any problems with the load shape can be identified early enough in the process to allow for corrective action prior to finalizing the load shapes for compliance.

6. **Slice of Day Allocations –** LSEs' initial Cost Allocation Mechanism (CAM), Central Procurement Entity (CPE), demand response (DR), and Integrated Resource Planning (IRP)/Modified Cost Allocation Mechanism (MCAM) allocations were included in the LSE Showing Tool templates transmitted to LSEs on October 6. Staff transmitted revised allocations to LSEs on October 24 (these revised allocations were included in the November 9 templates as well).

   Please provide any comments on the most recently distributed (October 24) Slice of Day allocations.

The AReM members recommend the CPUC create a summary tab that would show LSEs their allocations and obligations in one location to better aid LSEs in understanding the inputs and outputs of the tool.

7. **Slice of Day Year Ahead Showings –** All CPUC-jurisdictional LSEs were required to submit Slice of Day Year Ahead test showings on November 30, 2023.

   Please provide any comments on the Year Ahead showing process/experience.

Some AReM members experienced confusion in reporting the correct "Slice of Day NQC Under Contract" in the "LSE Showing" tab. Based on their experience in preparing the showings, AReM provides the following comments.

First, important instructions were left in a footnote of the user guide (Footnote 1 on page 7). The footnote indicated the following formula should be followed:

"Slice-of-Day NQC Under Contract can be calculated as [Compliance NQC Under Contract] * [Total Slice-of-Day NQC] / [Total Compliance NQC]"

AReM recommends important instructions such as these not be left in a footnote but brought into the main body of the text with appropriate definitions of all the terms involved. For instance, at the office hours, it was explained that "compliance NQC" refers to the ELCC-based compliance framework for 2024, but the footnote does not mention this.

Second, AReM members experienced some confusion in following this instruction for hybrid resources. The "Resource NQC" tab of the showing tool reports NQC separately for each sub ID of hybrid resources. However, the CPUC NQC list for the compliance framework does not separately break down the NQC by sub ID. In the instance an LSE only contracts with one resource type (either the generator or the storage in the hybrid pairing) under one sub ID, it is not clear how to follow the formula because the "Total Compliance NQC" for just the generation or just the storage sub ID is not reported.

Third, when slice of day becomes the compliance framework, this instruction makes no sense. There will be no ELCC-based compliance framework to use to perform this calculation. AReM recommends Staff prepare an alternative methodology for comment within its February 1 report. Many LSEs have long-term RA contracts that will have been signed pre-slice of day and need clear guidance on how these purchases will translate into the slice of day framework.

8. **Other Comments –** If you have additional comments that do not pertain to the above topics, please provide them here.

AReM has no further comments.

Slice of Day Implementation – Final Round of Informal Comments

In accordance with Decision (D.) 23-04-010, Energy Division Staff ("Staff") solicited informal feedback from parties following several Slice of Day implementation milestones throughout 2023. Prior to submittal of the February 1, 2024 Slice of Day Implementation Report, Staff provide this final opportunity for parties to submit informal comments on the various implementation milestones and subsequent material updates. Additionally, Staff appreciate comments on possible implementation barriers and potential solutions.

Party Name: Ava Community Energy (formerly East Bay Community Energy)
Contact Information: John Newton, jnewton@avaenergy.org

1. **Master Resource Database (MRD)** – Staff released the most recent version of the MRD to parties on July 7 and solicited informal comments through July 28. Staff released an updated MRD on October 4.

   Please provide any comments on the most recent version (October 4) of the MRD.

- **Responsibility for Updating MRD Information:** It is important to clarify who is responsible for updating the information in the MRD, whether that it is the load serving entity ("LSE"), asset owner, or someone else. Commission Staff's flexibility in welcoming informal, *ad hoc* updates for this kind of information is appreciated but, ultimately, we should move towards a more standardized (and therefore predictable) process.
- **MRD Data Field Alignment/Relationship to CAISO Master File:** We need to better explain the relationship between the fields in the MRD and the fields in the CAISO master file. LSEs and asset owners can interpret the fields differently, resulting in different expectations for what data should appear in the MRD fields. E.g., is the battery efficiency (1) what the resource is warrantied for, (2) the average performance of the resource, (3) guaranteed contractual efficiency, or (4) something else? In this example, these fields are all different values. It would be helpful to align to the CAISO Master File wherever possible to maintain consistency.

2. **Exceedance Analysis/Profiles** – Staff released its initial exceedance analyses and resulting profiles for wind and solar resources on July 20 and solicited informal comments from parties through August 10. In response to informal comments, Staff released revised exceedance analyses and profiles to parties on October 13; these profiles were included in the October 4 version of the MRD.

   Please provide any comments on the most recent version (October 4) of the wind and solar exceedance analyses/profiles.

Ava does not have any comments on this topic.

3. **Load Serving Entity (LSE) Showing Tool** – Staff released its initial LSE Showing Tool for Slice of Day test filings on August 30 and held a workshop on the tool on September 7. Staff further transmitted updated LSE Showing Tool templates containing LSE RA requirements and allocations on October 6, October 24, and November 9. Additionally, Staff held a series of Office Hours on September 21, October 19, and November 16 for purposes of answering questions regarding LSEs' templates.

   Please provide any comments on the most recent version (November 9) of the LSE Showing Tool.

- **Updating Guidance Materials with Changing Tools**: Perhaps because the pace of revision was so swift, sometimes guidance documentation did not keep up with changes in the slice of day workbooks. We anticipate that changes will continue. The Commission should clearly communicate when there are *documentation/guidance changes* (or updated versions are published associated particular versions of the slice of day workbooks).
- **Recognize that Technical Changes Impact Procurement Costs:** It is important to understand that LSE procurement—i.e., customer resources—is materially affected by changes in the compliance tools. Refinements to resource counting or resource generation characteristic *parameters* or *input methods* or *calculations* in the workbooks can significantly affect the 'real world' of what LSEs need to procure to meet their obligations. Wherever possible, we ask that Commission Staff communicate to LSEs if (or when) technical changes are thought to have such an impact.
- **Collaborate with LSEs and Stakeholders Ahead of Significant Compliance Tool Changes:** As many are aware, limited capacity market availability makes it very difficult to adapt to changing RA program requirement changes. Commission Staff are encouraged to work with a broad range of stakeholders, LSEs as well as other entities, prior to releasing significantly changed compliance tools so stakeholders and Commission Staff can understand current market dynamics and avoid unintended .

4. **Planning Reserve Margin (PRM) Calibration Tool** – Staff released its initial PRM Calibration Tool on October 24, held a workshop on the tool on October 25, and solicited informal comments through November 10. Staff released a revised PRM Calibration Tool and resulting PRM on November 17.

   Please provide any comments on the most recent version (November 17) of the PRM Calibration Tool and resulting PRM.

- **Continue Refining SOD PRM:** Continued development and refinement of a suitable PRM (or PRMs) for the Slice of Day framework is needed to ensure that the system enjoys the benefits of a reliable grid at an affordable level amid an exceptionally constrained capacity landscape. We look forward to this being a significant area of focus in the upcoming months.

5. **Load Forecasting Process** – California Energy Commission (CEC) Staff presented on the 2024 Test Year load forecasting process at the September 7 workshop on the LSE Showing Tool. ED Staff included LSEs' Slice of Day Test Year load forecasts in the LSE Showing Tool templates transmitted on October 6, October 24, and November 9. In response to some LSEs' concerns regarding their Slice

of Day load forecasts, CEC and ED Staff solicited informal comments on possible adjustments to the load forecasting process adopted in D.23-04-010 for Compliance Year 2025 through December 1.

Please provide any additional comments on the currently adopted load forecasting process.

- **Transparency:** Better transparency in the load forecasting process is needed. LSEs need to understand how the Slice of Day load forecast process produces its outcomes so we can understand and adapt our internal forecasting processes to align better with the compliance framework.
- **Forecast Process Adjustments to Accommodate LSE Operational Needs:** Understanding the forecast process and reasonably anticipating accurate outcomes is critical for LSE portfolio management and operational needs. Aligning the forecast process, methodology, and outputs with the timing of RA procurement and compliance (i.e., well in advance of year-ahead showings) will help LSEs better achieve their RA obligations.

6. **Slice of Day Allocations** – LSEs' initial Cost Allocation Mechanism (CAM), Central Procurement Entity (CPE), demand response (DR), and Integrated Resource Planning (IRP)/Modified Cost Allocation Mechanism (MCAM) allocations were included in the LSE Showing Tool templates transmitted to LSEs on October 6. Staff transmitted revised allocations to LSEs on October 24 (these revised allocations were included in the November 9 templates as well).

   Please provide any comments on the most recently distributed (October 24) Slice of Day allocations.

Ava does not have comments on this topic.

7. **Slice of Day Year Ahead Showings** – All CPUC-jurisdictional LSEs were required to submit Slice of Day Year Ahead test showings on November 30, 2023.

   Please provide any comments on the Year Ahead showing process/experience.

- **Simplify Resource Input Process:** We observed that resources (whether using the optimization or otherwise) were able to exceed their interconnection/injection limits in some hours. For storage optimization, we had significant challenges using the showing tool's optimization capability. While we eventually found a way to make it work, this took significant time to adapt to any particular version of the showing tool. Our adaptations were not always successful when migrating from earlier to later versions of the showing tool: we found we had to rediscover effective solutions over again. Inputting capacities for variable energy resources is complex and non-intuitive. We hope this will be made simpler in the future. Relatedly, inputting capacity from in-development resources needs more guidance documentation (and simplification). Import capacity inputs for shaped imports are a challenge. Again, more process documentation and simplification would be helpful.
- **Need to Cut Off Revisions to Already-Complicated Showing Tool Ahead of Showing Deadlines:** We appreciate that Commission Staff have been working very hard to create a stable, effective showing tool—and further appreciate that new versions were released quickly to address

problems. The showing tool remains complex and difficult to use. It will be very important that we have a stable, unchanging showing tool (and showing requirements) well in advance of filing/showing deadlines in 2024 and afterwards. We understand that this is in tension with the need to make necessary changes.

- **Limit the Number of Revisions:** To put a fine point on it, the Commission should consider limiting the number of revisions in any given year so LSEs (etc.) can adapt to and work with the tools required to meet our RA obligations (which directly affects LSE portfolio management). Limiting the frequency of compliance changes in any year is important to help LSEs manage their portfolios within budgetary and other resource constraints.

8. **Other Comments** – If you have additional comments that do not pertain to the above topics, please provide them here.

- **Thank you:** We appreciate Commission Staff's extended efforts to develop and improve the inaugural (test year) slice of day showing tools and process. Across the board, Commission Staff have made themselves available to help answer questions and guidance wherever possible.

Slice of Day Implementation – Final Round of Informal Comments

In accordance with Decision (D.) 23-04-010, Energy Division Staff ("Staff") solicited informal feedback from parties following several Slice of Day implementation milestones throughout 2023. Prior to submittal of the February 1, 2024 Slice of Day Implementation Report, Staff provide this final opportunity for parties to submit informal comments on the various implementation milestones and subsequent material updates. Additionally, Staff appreciate comments on possible implementation barriers and potential solutions.

Party Name: Public Advocates Office - California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

Contact Information: Kyle Navis, Senior Analyst and Patrick Cunningham, Senior Analyst
Phone: (415) 703-2840
Email: kyle.navis@cpuc.ca.gov

Date Submitted: December 22, 2023

The Public Advocates Office at the California Public Utilities Commission (Cal Advocates) submits the following informal comments on the Slice of Day (SOD) implementation elements. In these comments, Cal Advocates reviews its informal comments submitted on July 28, 2023;[1] August 10, 2023;[2] and November 13, 2023.[3] Table 1 lists the recommendations from each set of SOD informal comments (with a number column for reference) and lists the status of each recommendation. The "Resolved" status indicates that the recommendation has been accepted to Cal Advocates' satisfaction, "Open" indicates the recommendation is still active, and "No longer relevant" indicates that a recommendation was unique to that stage of implementation development and no longer applies to the current framework.

Table 1: Status of Cal Advocates Informal Comments Recommendations

Date	#	Recommendation	Status
July 28, 2023	1	Energy Division should clarify its interpretation of D.23-04-010, Conclusion of Law #5.	No longer relevant
	2	Energy Division should follow the clearest and most reasonable reading of D.23-04-010 and utilize the Top 5 Day load profile as the exceedance profile for solar and wind resources.	Open

[1] *The Public Advocates Office's Informal Comments on the Energy Division's Master Resource Database Draft 2*, July 28, 2023; submitted via electronic mail to the Energy Division.

[2] *The Public Advocates Office's Informal Comments on the Energy Division's Master Resource Database Draft 2*, August 10, 2023; submitted via electronic mail to the Energy Division.

[3] *The Public Advocates Office's Informal Comments on the Energy Division's Workshop on Slice of Day Calibration Tool and Thermal Ambient Derates*, November 13, 2023; submitted via electronic mail to the Energy Division.

	3	If Energy Division intends to utilize the proposed novel exceedance values in the MRD2, it should hold a stakeholder workshop to show how it selected the exceedance levels and to hear stakeholder feedback.	Open
August 10, 2023	4	The Energy Division should hold a stakeholder workshop to clarify its interpretation of D.23-04-010 and justify its selected exceedance values.	Open
	5	The current exceedance values discriminate by technology, region, and season.	Open
	6	Selecting the 50% exceedance profile from the Top 5 Day sample fits with Energy Division's interpretation of D.23-04-010 and yields preferable profiles.	No longer relevant
	7	Energy Division should not allow round number bias to affect its selection of exceedance profiles.	Resolved
	8	Another alternative counting approach would equalize risk across these factors.	No longer relevant
	9	The "Max value" cells on the "Comparison" tabs show incorrect values in many cases.	Resolved
November 13, 2023	10	The battery storage and pumped storage hydro dispatch profiles used in the SOD Calibration Tool should reflect the aggregated load-serving entity (LSE) showings for the SOD test year.	Resolved
	11	The underlying resource portfolio used as the starting point for the SOD Calibration Tool should incorporate resources that came online after January 2023.	Open
	12	The Energy Division should implement a monthly benchmarking exercise to ensure that the September Planning Reserve Margin (PRM) is sufficient to cover reliability needs in months with identified Loss of Load Expectation (LOLE).	Open
	13	The Energy Division should fix the typo that excludes Southern California wind resources from the PRM.	Resolved

Cal Advocates makes the following recommendations for the forthcoming report on Slice of Day implementation based on the list of recommendations that are listed as "open" in Table 1:

- The Energy Division should hold a stakeholder workshop to clarify its interpretation of D.23-04-010 and present its updated exceedance value methodology to all stakeholders (combining recommendations 3 and 4);
- Exceedance values for wind and solar resources should be calculated for each month to mitigate against discrimination by season or, alternatively, utilize the utilize the Top 5 Day load profile (combining recommendations 2 and 5);
- The underlying resource portfolio used as the starting point for the SOD Calibration Tool should incorporate resources that came online after January 2023 (recommendation 11); and

- The Energy Division should implement a monthly benchmarking exercise to ensure that the September Planning Reserve Margin is sufficient to cover reliability needs in months with identified Loss of Load Expectation (recommendation 12).

1. **Master Resource Database (MRD) –** Staff released the most recent version of the MRD to parties on July 7 and solicited informal comments through July 28. Staff released an updated MRD on October 4.

   Please provide any comments on the most recent version (October 4) of the MRD.

Cal Advocates has no comments at this time.

2. **Exceedance Analysis/Profiles –** Staff released its initial exceedance analyses and resulting profiles for wind and solar resources on July 20 and solicited informal comments from parties through August 10. In response to informal comments, Staff released revised exceedance analyses and profiles to parties on October 13; these profiles were included in the October 4 version of the MRD.

   Please provide any comments on the most recent version (October 4) of the wind and solar exceedance analyses/profiles.

I. The Energy Division should hold a stakeholder workshop to clarify its interpretation of D.23-04-010 and present its updated exceedance value methodology to all stakeholders.

Cal Advocates' informal comments on July 28, 2023 and November 13, 2023 requested that Energy Division hold a public workshop to explain how the language of D.23-04-010 resulted in the current exceedance value framework. While Cal Advocates generally supports the current exceedance value approach (excepting that it should be calculated on a monthly basis, see Section II), the approach was not vetted by stakeholders during the SOD workshop process and was not a proposal summarized in the SOD Workshop Report. The stakeholder community must have an opportunity to fully understand the changes and provide comments.

II. Exceedance values for wind and solar resources should be calculated for each month to mitigate against discrimination by season, or alternatively, utilize the utilize the Top 5 Day load profile.

The most recent version of the exceedance values workbooks utilized a minimization of mean-squared error approach to setting seasonal exceedance profiles while also disaggregating New Mexico and Arizona wind data sets. Cal Advocates supports both modifications but continues to recommend that the Energy Division implement monthly rather than seasonal exceedance values. Moving to monthly exceedance values requires very little additional staff effort and will ensure that wind and solar

resources receive full value for their expected reliability contributions via more precise counting estimates. Alternatively, the Energy Division could achieve the same level of precision by using the monthly Top 5 Day performance profile.[4]

3. **Load Serving Entity (LSE) Showing Tool –** Staff released its initial LSE Showing Tool for Slice of Day test filings on August 30 and held a workshop on the tool on September 7. Staff further transmitted updated LSE Showing Tool templates containing LSE RA requirements and allocations on October 6, October 24, and November 9. Additionally, Staff held a series of Office Hours on September 21, October 19, and November 16 for purposes of answering questions regarding LSEs' templates.

   Please provide any comments on the most recent version (November 9) of the LSE Showing Tool.

Cal Advocates has no comments at this time.

4. **Planning Reserve Margin (PRM) Calibration Tool –** Staff released its initial PRM Calibration Tool on October 24, held a workshop on the tool on October 25, and solicited informal comments through November 10. Staff released a revised PRM Calibration Tool and resulting PRM on November 17.

   Please provide any comments on the most recent version (November 17) of the PRM Calibration Tool and resulting PRM.

Finally, Cal Advocates reproduces two recommendations from its November 13, 2023 comments below.

III. The underlying resource portfolio used as the starting point for the SOD Calibration Tool should incorporate resources that came online after January 2023.

Energy Division staff indicated verbally during the October 25, 2023 Workshop on Slice of Day (SOD) Calibration Tool and Thermal Ambient Derates that the October LOLE study incorporated resources added to the system between August 2022 and January 2023. The same study also used

[4] Workshop Report on Final Proposals from Reform Track Phase 2 Workstreams 1 – 3 Submitted by Pacific Gas and Electric Company (U 39 E), (SoD WG Report), November 15, 2022. Available at: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/resource-adequacy-homepage/resource-adequacy-compliance-materials/resource-adequacy-history/generationresourceadequacy_20221114.pdf.

2,200 megawatts (MW) of perfect capacity (PCAP) to calibrate a 0.1 LOLE.[5] Cal Advocates recommends that any subsequent LOLE studies utilize the most recently available information on In-Development and Online Resources. For instance, the October 2023 LOLE study ideally would have used the resources shown on the "Online + In-dev Resources" tab of the *Aggregated RESOLVE LSE Plan and Baseline and Dev Resources, Updated 9/20/2023* workbook posted on the CPUC's 2022-2023 Integrated Resource Plan Cycle Events and Materials.[6] A substantial amount of capacity is expected to come online in 2024[7] and incorporating those new grid-connected resources would improve the accuracy of the PRM Conversion Tool and the LOLE studies. Energy Division should continue to use the current resource lists, including resources that are expected to come online in a study year, beyond the 2024 Test Year.

IV. The Energy Division should implement a monthly benchmarking exercise to ensure that the September Planning Reserve Margin is sufficient to cover reliability needs in months with identified Loss of Load Expectation.

The studies Energy Division staff used to calibrate a portfolio to 0.1 LOLE both assume that all capacity contracted to meet the September peak will be contracted for all months of the year. However, it is unclear if the PRM identified using a September portfolio will be adequate to ensure reliability in the other months with identified LOLE, especially July and August. To prevent reliability issues, Cal Advocates recommends that Energy Division use the SOD Calibration Tool to stress-test the identified PRM (which is based on September load and portfolio assumptions) using the August and/or July portfolio assumptions. This stress test would require utilizing resource portfolios that reflect the actual levels of capacity shown by LSEs in the relevant months.

5. **Load Forecasting Process –** California Energy Commission (CEC) Staff presented on the 2024 Test Year load forecasting process at the September 7 workshop on the LSE Showing Tool. ED Staff included LSEs' Slice of Day Test Year load forecasts in the LSE Showing Tool templates transmitted on October 6, October 24, and November 9. In response to some LSEs' concerns regarding their Slice of Day load forecasts, CEC and ED Staff solicited informal comments on possible adjustments to the load forecasting process adopted in D.23-04-010 for Compliance Year 2025 through December 1.

   Please provide any additional comments on the currently adopted load forecasting process.

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[5] See *Resource Adequacy Slide of Day Translation Tool and Update to Thermal Derate Model*, October 25, 2023 at slide 16. Available at: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/resource-adequacy-homepage/resource-adequacy-compliance-materials/resource-adequacy-history/r2310011sodtranslationtoolthermalderatemodel.pdf.

[6] Available at: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/long-term-procurement-planning/2022-irp-cycle-events-and-materials.

[7] *Joint Agency Reliability Planning Assessment,* August 2023 at 5-6. Available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=251991.

Cal Advocates has no comments at this time.

6. **Slice of Day Allocations –** LSEs' initial Cost Allocation Mechanism (CAM), Central Procurement Entity (CPE), demand response (DR), and Integrated Resource Planning (IRP)/Modified Cost Allocation Mechanism (MCAM) allocations were included in the LSE Showing Tool templates transmitted to LSEs on October 6. Staff transmitted revised allocations to LSEs on October 24 (these revised allocations were included in the November 9 templates as well).

   Please provide any comments on the most recently distributed (October 24) Slice of Day allocations.

Cal Advocates has no comments at this time.

7. **Slice of Day Year Ahead Showings –** All CPUC-jurisdictional LSEs were required to submit Slice of Day Year Ahead test showings on November 30, 2023.

   Please provide any comments on the Year Ahead showing process/experience.

Cal Advocates has no comments at this time.

8. **Other Comments –** If you have additional comments that do not pertain to the above topics, please provide them here.

Cal Advocates requests the Commission adopt the recommendations herein to the SOD implementation elements. Please contact Kyle Navis with any questions or comments at kyle.navis@cpuc.ca.gov.

Slice of Day Implementation – Final Round of Informal Comments

In accordance with Decision (D.) 23-04-010, Energy Division Staff ("Staff") solicited informal feedback from parties following several Slice of Day implementation milestones throughout 2023. Prior to submittal of the February 1, 2024 Slice of Day Implementation Report, Staff provide this final opportunity for parties to submit informal comments on the various implementation milestones and subsequent material updates. Additionally, Staff appreciate comments on possible implementation barriers and potential solutions.

Party Name: Calpine Corporation

Contact Information: matthew.barmack@calpine.com and emily.turkel@calpine.com

1. **Master Resource Database (MRD) –** Staff released the most recent version of the MRD to parties on July 7 and solicited informal comments through July 28. Staff released an updated MRD on October 4.

   Please provide any comments on the most recent version (October 4) of the MRD.

   No comment.

2. **Exceedance Analysis/Profiles –** Staff released its initial exceedance analyses and resulting profiles for wind and solar resources on July 20 and solicited informal comments from parties through August 10. In response to informal comments, Staff released revised exceedance analyses and profiles to parties on October 13; these profiles were included in the October 4 version of the MRD.

   Please provide any comments on the most recent version (October 4) of the wind and solar exceedance analyses/profiles.

   No comment.

3. **Load Serving Entity (LSE) Showing Tool –** Staff released its initial LSE Showing Tool for Slice of Day test filings on August 30 and held a workshop on the tool on September 7. Staff further transmitted updated LSE Showing Tool templates containing LSE RA requirements and allocations on October 6, October 24, and November 9. Additionally, Staff held a series of Office Hours on September 21, October 19, and November 16 for purposes of answering questions regarding LSEs' templates.

   Please provide any comments on the most recent version (November 9) of the LSE Showing Tool.

   No comment.

4. **Planning Reserve Margin (PRM) Calibration Tool –** Staff released its initial PRM Calibration Tool on October 24, held a workshop on the tool on October 25, and solicited informal comments through November 10. Staff released a revised PRM Calibration Tool and resulting PRM on November 17.

   Please provide any comments on the most recent version (November 17) of the PRM Calibration Tool and resulting PRM.

   Calpine appreciates corrections made to the PRM Calibration Tool in response to stakeholder concerns, including the inclusion of Southern California wind and additional storage and the appropriate modeling of storage to concentrate its duration in hours with the tightest supply and demand balances. The 15.43% PRM is much more reasonable than the prior value shared in October. Nonetheless, the PRM is still not proven to achieve a 1-in-10 LOLE on an annual basis. This problem was illustrated in an analysis shared by Astrape at an October 2022 workshop (slides 5-12 of this presentation). To address this problem, the CPUC should:

   1. Start with a PRM derived from the CPUC's proposed translation approach for September or another month;
   2. Identify monthly portfolios that meet the SoD requirements implied by that PRM;
   3. Test that those 12 monthly portfolios in combination yield 1-in-10 LOLE on an annual basis in SERVM;
   4. If step 3 fails, repeat steps 2 and 3 with a higher PRM.

   This is a necessary component of PRM calibration to ensure a PRM that meets the CPUC's reliability target.

5. **Load Forecasting Process –** California Energy Commission (CEC) Staff presented on the 2024 Test Year load forecasting process at the September 7 workshop on the LSE Showing Tool. ED Staff included LSEs' Slice of Day Test Year load forecasts in the LSE Showing Tool templates transmitted on October 6, October 24, and November 9. In response to some LSEs' concerns regarding their Slice of Day load forecasts, CEC and ED Staff solicited informal comments on possible adjustments to the load forecasting process adopted in D.23-04-010 for Compliance Year 2025 through December 1.

   Please provide any additional comments on the currently adopted load forecasting process.

   No comment.

6. **Slice of Day Allocations –** LSEs' initial Cost Allocation Mechanism (CAM), Central Procurement Entity (CPE), demand response (DR), and Integrated Resource Planning (IRP)/Modified Cost Allocation Mechanism (MCAM) allocations were included in the LSE Showing Tool templates transmitted to LSEs on October 6. Staff transmitted revised allocations to LSEs on October 24 (these revised allocations were included in the November 9 templates as well).

Please provide any comments on the most recently distributed (October 24) Slice of Day allocations.

No comment.

7. **Slice of Day Year Ahead Showings –** All CPUC-jurisdictional LSEs were required to submit Slice of Day Year Ahead test showings on November 30, 2023.

   Please provide any comments on the Year Ahead showing process/experience.

No comment.

8. **Other Comments –** If you have additional comments that do not pertain to the above topics, please provide them here.

No comment.

FINAL INFORMAL COMMENTS OF THE
CALIFORNIA WIND ENERGY ASSOCIATION
ON SLICE OF DAY IMPLEMENTATION
R. 23-10-011

December 22, 2023

The California Wind Energy Associa□on (CalWEA) submits these brief informal comments on Slice of Day (SOD) implementa□on, focusing only on Ques□on 2: Exceedance Analysis/Profiles.

As stated in our August 10, 2023, comments, CalWEA remains concerned that par□es have not had a chance to discuss with Energy Division how its proposed exceedance analysis framework is supported by D.23-04-010, par□cularly since the proposed framework is not consistent with any proposal included in the SOD Workshop Report. We con□nue to believe that Energy Division's proposal is not supported by a fair and reasonable reading of the Commission's reference to "PG&E's Top 5 Day methodology" in view of PG&E's final recommenda□on.

We urge Energy Division to hold a workshop to explain its proposal and then provide an addi□onal comment opportunity before finalizing the proposal in view of par□es' comments.

Contact: Nancy Rader, nrader@calwea.org

Slice of Day Implementation – Final Round of Informal Comments

In accordance with Decision (D.) 23-04-010, Energy Division Staff ("Staff") solicited informal feedback from parties following several Slice of Day implementation milestones throughout 2023. Prior to submittal of the February 1, 2024 Slice of Day Implementation Report, Staff provide this final opportunity for parties to submit informal comments on the various implementation milestones and subsequent material updates. Additionally, Staff appreciate comments on possible implementation barriers and potential solutions.

Party Name: Middle River Power LLC – Brian Theaker and Nuo Tang

Contact Information: btheaker@mrpgenco.com and ntang@mrpgenco.com

1. **Master Resource Database (MRD) –** Staff released the most recent version of the MRD to parties on July 7 and solicited informal comments through July 28. Staff released an updated MRD on October 4.

   Please provide any comments on the most recent version (October 4) of the MRD.

MRP has no comment on this topic.

2. **Exceedance Analysis/Profiles –** Staff released its initial exceedance analyses and resulting profiles for wind and solar resources on July 20 and solicited informal comments from parties through August 10. In response to informal comments, Staff released revised exceedance analyses and profiles to parties on October 13; these profiles were included in the October 4 version of the MRD.

   Please provide any comments on the most recent version (October 4) of the wind and solar exceedance analyses/profiles.

It's unclear whether Staff used the same exceedance methodology as directed in Decision 23-04-010 (at page 32). It seems that Staff used the Excel add-in Solver to minimize the deviation of hourly profiles from the average of top 5 days profiles by implementing a weighting factor. Neither the exceedance methodology adopted in D.23-04-010, nor PG&E's original exceedance proposal, included such hourly weighting factors. Staff did not notify parties of this change prior to using it to develop the test year exceedance values. Moreover, parties were not given an opportunity to consider the proposed changes to the directed methodology, which could significantly over- or under-count resource capacity values.

3. **Load Serving Entity (LSE) Showing Tool –** Staff released its initial LSE Showing Tool for Slice of Day test filings on August 30 and held a workshop on the tool on September 7. Staff further transmitted updated LSE Showing Tool templates containing LSE RA requirements and allocations on October 6, October 24, and November 9. Additionally, Staff held a series of Office Hours on September 21, October 19, and November 16 for purposes of answering questions regarding LSEs' templates.

   Please provide any comments on the most recent version (November 9) of the LSE Showing Tool.

MRP has no comment on this topic.

4. **Planning Reserve Margin (PRM) Calibration Tool –** Staff released its initial PRM Calibration Tool on October 24, held a workshop on the tool on October 25, and solicited informal comments through November 10. Staff released a revised PRM Calibration Tool and resulting PRM on November 17.

   Please provide any comments on the most recent version (November 17) of the PRM Calibration Tool and resulting PRM.

MRP believes that Staff did not create a transparent process to disseminate information regarding the PRM for the slice-of-day ("SoD") RA framework. The workshop process provided neither enough substantive discussion nor enough information to allow MRP to have confidence that the calculated September PRM, which changed three times, would maintain reliability at a 1-in-10 year Loss of Load Expectation value. Further, the workshop process set forth no definitive public schedule to allow parties to understand the next steps in the process. Finally, it appeared that much of the work to establish the test year PRM was performed behind the scenes without party input.

To repeat, the calculated PRM value was only for September which, from Energy Division's September 2022 "stress test" analysis, seems unlikely to yield the PRM required to ensure the necessary portfolio of resources is procured on an *annual* basis.

From all of this, it's unclear if the test year PRM process is intended to create a robust record in the proceeding to fully ensure that the SoD RA program can procure sufficient resources to maintain reliability on an annual basis.

To proceed with the development of the appropriate 2025 SoD PRM,, MRP suggests that staff establish a schedule for the rest of the workshop process that includes regular updates from Energy Division Staff. Parties should be afforded the opportunity to discuss questions and next steps. Staff and parties should have a clear understanding of the PRM that is appropriate for the full-year SoD RA program at the end of the workshop process.

5. **Load Forecasting Process –** California Energy Commission (CEC) Staff presented on the 2024 Test Year load forecasting process at the September 7 workshop on the LSE Showing Tool. ED Staff included LSEs' Slice of Day Test Year load forecasts in the LSE Showing Tool templates transmitted on October 6, October 24, and November 9. In response to some LSEs' concerns regarding their Slice of Day load forecasts, CEC and ED Staff solicited informal comments on possible adjustments to the load forecasting process adopted in D.23-04-010 for Compliance Year 2025 through December 1.

   Please provide any additional comments on the currently adopted load forecasting process.

MRP has no comment on this topic.

6. **Slice of Day Allocations –** LSEs' initial Cost Allocation Mechanism (CAM), Central Procurement Entity (CPE), demand response (DR), and Integrated Resource Planning (IRP)/Modified Cost Allocation Mechanism (MCAM) allocations were included in the LSE Showing Tool templates transmitted to LSEs on October 6. Staff transmitted revised allocations to LSEs on October 24 (these revised allocations were included in the November 9 templates as well).

   Please provide any comments on the most recently distributed (October 24) Slice of Day allocations.

MRP has no comment on this topic.

7. **Slice of Day Year Ahead Showings –** All CPUC-jurisdictional LSEs were required to submit Slice of Day Year Ahead test showings on November 30, 2023.

   Please provide any comments on the Year Ahead showing process/experience.

MRP has no comment on this topic.

8. **Other Comments –** If you have additional comments that do not pertain to the above topics, please provide them here.

MRP requests parties' informal comments be included in the Energy Division's SoD Implementation report so that they are part of the record.

Slice of Day Implementation – Final Round of Informal Comments

In accordance with Decision (D.) 23-04-010, Energy Division Staff ("Staff") solicited informal feedback from parties following several Slice of Day implementation milestones throughout 2023. Prior to submittal of the February 1, 2024 Slice of Day Implementation Report, Staff provide this final opportunity for parties to submit informal comments on the various implementation milestones and subsequent material updates. Additionally, Staff appreciate comments on possible implementation barriers and potential solutions.

Party Name: Pacific Gas and Electric Company (PG&E)

Contact Information: Lisa Wan (lisa.wan@pge.com)

1. **Master Resource Database (MRD) –** Staff released the most recent version of the MRD to parties on July 7 and solicited informal comments through July 28. Staff released an updated MRD on October 4.

   Please provide any comments on the most recent version (October 4) of the MRD.

   Notes from PG&E:

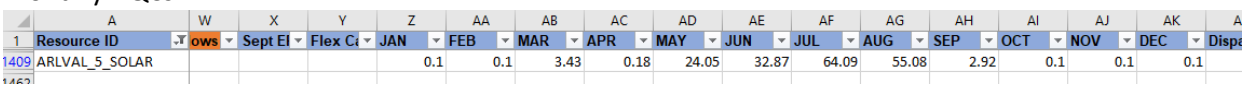
   - **Issue**: At the current publishing cadence, new resources coming online are not necessarily included in a timely manner in the MRD. This information is necessary for LSEs to ensure Slice of Day Filings are accurate and complete.
   - **Suggested Solution**: PG&E respectfully requests that the Energy Division consider publishing the MRD more frequently than monthly in order to capture new resources coming online and any changes to CAISO NQCs.

   - **Issue**: Not all resources seem to be given the same treatment in the MRD. PG&E noticed that some out-of-state energy-only resources have monthly NQC and an hourly NQC of zero MWs across all hours.
   - **Example included below**:

   Hourly NQCs of zero MWs:

Resource ID	Hybrid Sul	Resource Ty	Category	BAA	Path Designat	Region	Deliverability St	Pmax/NQ	January 1	January 2	January 3	January 4	January 5	January 6	January 7	January 8	January 9	January 10	January 11	January 12	January 13	January 14	January 15	January 16	January 17
ARLVAL_5_SOLAR		Solar_Fixed	Solar Fixed	SRP	0	AZ	0	127	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

   Monthly NQCs:



	A	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	A
1	Resource ID	ows	Sept El	Flex Ca	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Dispa
1409	ARLVAL_5_SOLAR				0.1	0.1	3.43	0.18	24.05	32.87	64.09	55.08	2.92	0.1	0.1	0.1	

2. **Exceedance Analysis/Profiles –** Staff released its initial exceedance analyses and resulting profiles for wind and solar resources on July 20 and solicited informal comments from parties through August 10. In response to informal comments, Staff released revised exceedance analyses and profiles to parties on October 13; these profiles were included in the October 4 version of the MRD.

   Please provide any comments on the most recent version (October 4) of the wind and solar exceedance analyses/profiles.

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3. **Load Serving Entity (LSE) Showing Tool –** Staff released its initial LSE Showing Tool for Slice of Day test filings on August 30 and held a workshop on the tool on September 7. Staff further transmitted updated LSE Showing Tool templates containing LSE RA requirements and allocations on October 6, October 24, and November 9. Additionally, Staff held a series of Office Hours on September 21, October 19, and November 16 for purposes of answering questions regarding LSEs' templates.

   Please provide any comments on the most recent version (November 9) of the LSE Showing Tool.

   Notes from PG&E:

   - **Suggestion**: Link the CAM Storage Allocation Single Cycle Value in [LSE Showing] to its value in [Requirements and Allocations] and have it automatically adjust with each month/year. This modification would be in line with how the current System RA Filing template treats allocations, where the formulas automatically retrieve the monthly allocations to match the corresponding Showing Month on the Certification tab.

   - **Issue:** Rounding in the allocations (or validations) tab results in a validation error for charging sufficiency, since the two numbers are being validated against each other but one number is rounded and the other is not. The allocated CAM Maximum Continuous Energy values include rounded values that are inconsistent with the allocated CAM Storage Capacity, which leads to a charging sufficiency error that cannot be manually revised. One of the calculations in the workbook multiplies the single cycle CAM Storage Capacity by 4 (for 4 showing hours), and in some months, this is less than the required CAM Maximum Continuous Energy.

   - **Suggestion:** If possible, include a metric on the Hourly Availability Chart to clearly show the charging sufficiency compliance requirement and the delta (positive or negative) of the shown resources. Having the metric and showing the delta would be more useful than a simple color-coded pass/fail.

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4. **Planning Reserve Margin (PRM) Calibration Tool –** Staff released its initial PRM Calibration Tool on October 24, held a workshop on the tool on October 25, and solicited informal comments through November 10. Staff released a revised PRM Calibration Tool and resulting PRM on November 17.

   Please provide any comments on the most recent version (November 17) of the PRM Calibration Tool and resulting PRM.

5. **Load Forecasting Process –** California Energy Commission (CEC) Staff presented on the 2024 Test Year load forecasting process at the September 7 workshop on the LSE Showing Tool. ED Staff included LSEs' Slice of Day Test Year load forecasts in the LSE Showing Tool templates transmitted on October 6, October 24, and November 9. In response to some LSEs' concerns regarding their Slice of Day load forecasts, CEC and ED Staff solicited informal comments on possible adjustments to the load forecasting process adopted in D.23-04-010 for Compliance Year 2025 through December 1.

   Please provide any additional comments on the currently adopted load forecasting process.

6. **Slice of Day Allocations –** LSEs' initial Cost Allocation Mechanism (CAM), Central Procurement Entity (CPE), demand response (DR), and Integrated Resource Planning (IRP)/Modified Cost Allocation Mechanism (MCAM) allocations were included in the LSE Showing Tool templates transmitted to LSEs on October 6. Staff transmitted revised allocations to LSEs on October 24 (these revised allocations were included in the November 9 templates as well).

   Please provide any comments on the most recently distributed (October 24) Slice of Day allocations.

   Notes from PG&E:

   - **Suggestion**: Please consider distributing the allocations as an independent spreadsheet.

7. **Slice of Day Year Ahead Showings –** All CPUC-jurisdictional LSEs were required to submit Slice of Day Year Ahead test showings on November 30, 2023.

   Please provide any comments on the Year Ahead showing process/experience.

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8. **Other Comments –** If you have additional comments that do not pertain to the above topics, please provide them here.

Slice of Day Implementation – Final Round of Informal Comments

Party Name: Pattern Energy Group LP

Contact Information: **Johnny Casana**
Strategy Director, North America
Pattern Energy Group LP
1088 Sansome Street
San Francisco, CA 94111
Tel: (503) 791-3113
E-Mail: johnny.casana@patternenergy.com

1. **Master Resource Database (MRD) –** Staff released the most recent version of the MRD to parties on July 7 and solicited informal comments through July 28. Staff released an updated MRD on October 4.

   Please provide any comments on the most recent version (October 4) of the MRD.

Pattern Energy does not provide additional comments on the MRD at this time.

2. **Exceedance Analysis/Profiles –** Staff released its initial exceedance analyses and resulting profiles for wind and solar resources on July 20 and solicited informal comments from parties through August 10. In response to informal comments, Staff released revised exceedance analyses and profiles to parties on October 13; these profiles were included in the October 4 version of the MRD.

   Please provide any comments on the most recent version (October 4) of the wind and solar exceedance analyses/profiles.

Introduction

Pattern appreciates staff's extensive efforts to implement D.23-04-010. The focus of these comments is on the exceedance analysis. Note requirements of D.23-04-010 provides discretion to Energy Division staff to "to develop the solar and wind resource profiles, which will be incorporated into the Master Resource Database, and to publish the non-confidential version of the exceedance calculations (See Ordering Paragraph 5). It is important to note that this discretion and opportunity for ongoing refinement is not limited to implementation work for the 2024 test year. We strongly encourage Energy Division to continue to evaluate the exceedance thresholds and consider how the exceedance values align with the projected system-reliability value, particularly for resources in developing regions. We appreciate Energy Division's efforts to account for party feedback in the second version of the draft exceedance profiles (i.e., the

October 4, 2023 version). As discussed below, there are outstanding questions and we believe that further refinements are needed.

Discussion Regarding Exceedance Analysis

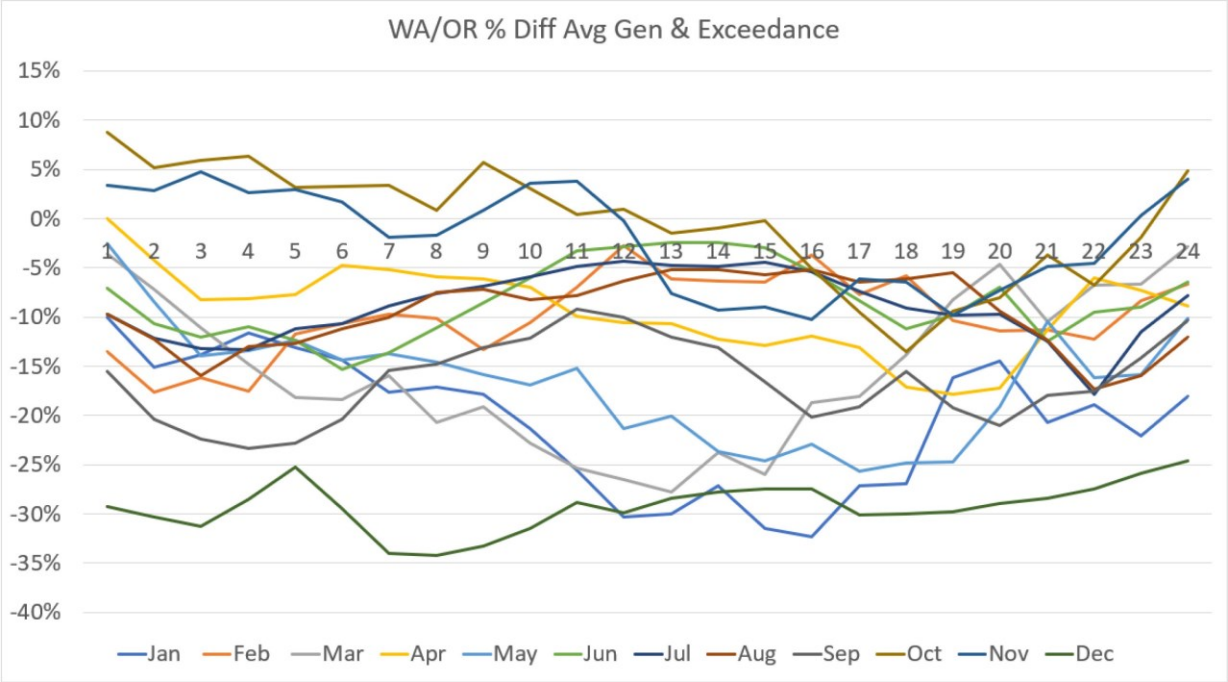
A. The CPUC Should Evaluate Modeled Data for New Mexico Exceedance Factors.

In past Slice of Day comments, Pattern Energy has expressed concerns regarding data availability for developing regions with relatively small historical production data. New Mexico is one example where the operational data is relatively small compared to contracted volume of specified imports that are under development and projects that recently met COD. We continue to recommend that the Energy Division evaluate the use of modeled data from the Integrated Resource Planning ("IRP") proceeding, as expressly authorized by Ordering Paragraph 6 of D.23-04-010. The IRP modeling team has made important strides in developing weather-adjusted model data for non-California Independent System Operator ("CAISO") regions and we encourage the Resource Adequacy ("RA") team to evaluate whether a larger sample size in certain regions, like New Mexico, would provide a more robust data set. This is especially important for wind resources where variability in hourly production of individual resources is far less pronounced when evaluating wind resources at a system level. Moreover, developing a more robust data set for New Mexico and other out-of-state wind regions will enable the California Public Utilities Commission ("Commission" or ("CPUC") to better align the procurement signals in the IRP proceeding which show considerable system value for out-of-state wind resources.

B. The CPUC Should Calibrate the Exceedance Values Against Average "Worst Day" Profiles.

The CPUC should continue to calibrate wind exceedance profiles by comparing the exceedance results to average generation profiles. The CPUC should tailor the exceedance profiles to hours where there are demonstrably higher loss-of-load expectation ("LOLE") risks and use average profiles in hours of lesser concern. The Slice of Day ("SOD") analysis should focus on operational profile during hours of greatest concern in the near-term (i.e., in the year ahead timeframe). In off-peak hours or on-peak hours where there is clearly no loss of load expectation concern, the CPUC should not apply an exceedance factor and instead simply utilize the average generation profile. Pattern Energy recommends completing this analysis in early 2024 so parties have clear expectations about the capacity values that will be applied to the 2025 RA compliance year.

To help understand this point, Pattern Energy compared the exceedance values from the October 4, 2023 Exceedance Analysis for wind resources in the Pacific Northwest against the average "worst-day" wind generation values and found considerable variation between the exceedance values and average wind generation values, particularly in non-summer months. The results of this analysis are presented below:



Since the calibration of the exceedance thresholds in the October 4, 2023 version was done on "hours of concern" (i.e., summer net-peak conditions), the August and September difference to average wind generation are generally within +/-10%. However, other months like December significantly undercount the resource potential by more than 30%, compared to the average wind generation profile. In other words, the exceedance calibration has penalized non-summer months in order to calibrate the summer months. To address this concern, Pattern Energy recommends conducting additional calibration exercises to more closely align the selected exceedance profiles with average generation in each month, or simply use the average generation profiles in non-summer months, as noted above...

C. Pattern Energy Supports Focusing the Exceedance Analysis on Generation-related performance.

Pattern supports Energy Division's recognition that resource counting rules should focus on the performance of resources, as best reflected in large sample sizes. We appreciate the Commission's focus on performance of a fleet of resources as a measure of predicted reliability value to grid operators. By contrast, the CPUC should evaluate transmission-related risks that affect the delivery of resources in the context of the IRP, where transmission constraints can be studied and resolved (e.g., in the regular IRP-TPP handoff, which also looks at Maximum Import Capability). Since transmission-related outages are not in the control of the resource owner and are coordinated by the CAISO in conjunction with transmission owners, penalizing resources for transmission-related outages will not incent more reliable operations. As the CPUC continues to refine the exceedance values for the Slice of Day framework, we encourage the Commission to continue to focus on performance of generation resources as reflected in historic generation data or modeled data. Transmission-related outages and curtailment should not factor into the exceedance profiles.

3. **Load Serving Entity (LSE) Showing Tool –** Staff released its initial LSE Showing Tool for Slice of Day test filings on August 30 and held a workshop on the tool on September 7. Staff further transmitted updated LSE Showing Tool templates containing LSE RA requirements and allocations on October 6, October 24, and November 9. Additionally, Staff held a series of Office Hours on September 21, October 19, and November 16 for purposes of answering questions regarding LSEs' templates.

   Please provide any comments on the most recent version (November 9) of the LSE Showing Tool.

Pattern Energy does not provide additional comments on the LSE Showing Tool at this time.

4. **Planning Reserve Margin (PRM) Calibration Tool –** Staff released its initial PRM Calibration Tool on October 24, held a workshop on the tool on October 25, and solicited informal comments through November 10. Staff released a revised PRM Calibration Tool and resulting PRM on November 17.

   Please provide any comments on the most recent version (November 17) of the PRM Calibration Tool and resulting PRM.

Pattern Energy does not provide additional comments on the PRM Calibration Tool at this time.

5. **Load Forecasting Process –** California Energy Commission (CEC) Staff presented on the 2024 Test Year load forecasting process at the September 7 workshop on the LSE Showing Tool. ED Staff included LSEs' Slice of Day Test Year load forecasts in the LSE Showing Tool templates transmitted on October 6, October 24, and November 9. In response to some LSEs' concerns regarding their Slice of Day load forecasts, CEC and ED Staff solicited informal comments on possible adjustments to the load forecasting process adopted in D.23-04-010 for Compliance Year 2025 through December 1.

   Please provide any additional comments on the currently adopted load forecasting process.

Pattern Energy does not provide additional comments on the Load Forecasting process at this time.

6. **Slice of Day Allocations –** LSEs' initial Cost Allocation Mechanism (CAM), Central Procurement Entity (CPE), demand response (DR), and Integrated Resource Planning (IRP)/Modified Cost Allocation Mechanism (MCAM) allocations were included in the LSE Showing Tool templates transmitted to LSEs on October 6. Staff transmitted revised allocations to LSEs on October 24 (these revised allocations were included in the November 9 templates as well).

   Please provide any comments on the most recently distributed (October 24) Slice of Day allocations.

Pattern Energy does not provide additional comments on the SOD Allocations at this time.

7. **Slice of Day Year Ahead Showings –** All CPUC-jurisdictional LSEs were required to submit Slice of Day Year Ahead test showings on November 30, 2023.

   Please provide any comments on the Year Ahead showing process/experience.

Pattern Energy encourages the CPUC to publish aggregated data on SOD year-ahead showing, such that market participants can tailor their offerings based on a clear understanding of which specific hours are of greatest concern to the CPUC.

8. **Other Comments –** If you have additional comments that do not pertain to the above topics, please provide them here.

Pattern Energy greatly appreciates staff's efforts to hold office hours, refine various aspects of the SOD implementation process, and account for a variety of stakeholder perspectives. We look forward to continuing to work with Energy Division on the successful implementation of the new SOD framework ahead of the 2025 RA compliance year.

Slice of Day Implementation – Final Round of Informal Comments

In accordance with Decision (D.) 23-04-010, Energy Division Staff ("Staff") solicited informal feedback from parties following several Slice of Day implementation milestones throughout 2023. Prior to submittal of the February 1, 2024 Slice of Day Implementation Report, Staff provide this final opportunity for parties to submit informal comments on the various implementation milestones and subsequent material updates. Additionally, Staff appreciate comments on possible implementation barriers and potential solutions.

Party Name: **Southern California Edison**

Contact Information: Stephen Keehn, Stephen.keehn@sce.com

1. **Master Resource Database (MRD) –** Staff released the most recent version of the MRD to parties on July 7 and solicited informal comments through July 28. Staff released an updated MRD on October 4.

   Please provide any comments on the most recent version (October 4) of the MRD.

   SCE does not have any comments.

2. **Exceedance Analysis/Profiles –** Staff released its initial exceedance analyses and resulting profiles for wind and solar resources on July 20 and solicited informal comments from parties through August 10. In response to informal comments, Staff released revised exceedance analyses and profiles to parties on October 13; these profiles were included in the October 4 version of the MRD.

   Please provide any comments on the most recent version (October 4) of the wind and solar exceedance analyses/profiles.

   SCE does not have any comments.

3. **Load Serving Entity (LSE) Showing Tool –** Staff released its initial LSE Showing Tool for Slice of Day test filings on August 30 and held a workshop on the tool on September 7. Staff further transmitted updated LSE Showing Tool templates containing LSE RA requirements and allocations on October 6, October 24, and November 9. Additionally, Staff held a series of Office Hours on September 21, October 19, and November 16 for purposes of answering questions regarding LSEs' templates.

   Please provide any comments on the most recent version (November 9) of the LSE Showing Tool.

While SCE recognizes the effort made by Energy Division staff to automate SoD energy storage showings, the functionality should be removed until it is improved enough to be useful. During the development of SoD, there was significant effort made to allow LSEs to show energy storage resources flexibly and consistent with the LSE's slice-by-slice needs. Since these needs are requirement-dependent and portfolio-dependent, the full automation of energy storage showings is challenging and at this point best done by LSE staff. In office hours and workshop discussions, it seems the automation functionality does not work for most LSEs and the inclusion of the functionality added confusion to the overall process.

4. **Planning Reserve Margin (PRM) Calibration Tool –** Staff released its initial PRM Calibration Tool on October 24, held a workshop on the tool on October 25, and solicited informal comments through November 10. Staff released a revised PRM Calibration Tool and resulting PRM on November 17.

   Please provide any comments on the most recent version (November 17) of the PRM Calibration Tool and resulting PRM.

Expanding on SCE's earlier informal comments on PRM setting, ED staff and their consultants will need to be careful to include the correct resources from the LOLE model to PRM calibration. The RA counting for the exact portfolio that is needed to meet the reliability standard is what needs to be used to set PRMs in the current single-monthly RA framework or under SoD. By setting the PRM with the RA counting of the LOLE portfolio, when the PRM is used to set RA requirements, those requirements will match the reliability attributes of the LOLE portfolio. Following the most recent PRM setting, SCE still has concerns around unspecified imports to CAISO and the treatment of "perfect capacity" if it is included in the LOLE portfolio. There may

be inconsistencies in other resource classes, but SCE's comments here will focus just on these categories.

Unspecified Imports

To properly account for unspecified import resources' contribution to LOLE modelling, the exact amount of unspecified imports should be included in the PRM setting. The current ED approach to imports makes this challenging since each portfolio run "selects" a different amount of unspecified imports to CAISO and thus the amount of imports "required" to meet the reliability standard is not easily determined. This means each scenario run effectively has a different amount of resources. If ED continues to let each LOLE scenario run select its own hourly import amounts, ED should develop a methodology to determine the hourly imports required in the peak day to meet the LOLE standard.

SCE suggests a more straight-forward approach for unspecified imports in LOLE studies for PRM setting. Since the most important output of the LOLE model is the portfolio required to meet the reliability standard, it seems imprudent to let the CAISO portfolio deviate between LOLE scenario runs. To remedy this, SCE suggests the unspecified imports be fixed at some amount for each hour in each run. We'd then know exactly how many imports were required since the resulting portfolio would have the same imports in each scenario. The peak-day import profile could then be used directly in the PRM setting tool.

Perfect Capacity

Similar to unspecified imports, it is important to know exactly how much perfect capacity was required to meet the reliability standard and the hourly perfect capacity should be directly included in the SoD PRM setting. While the SoD showing rules do not include a "perfect capacity" category, it is clear that perfect capacity can be shown at its full capacity in each hour. Since this profile is what the LOLE model relied on to meet the reliability standard, the only way to set the PRM consistent with the portfolio used is to directly include perfect capacity in the PRM setting tool. Attempting to "translate" perfect capacity into combinations of other resource types will unnecessarily add errors in the RA PRM setting process.

5. **Load Forecasting Process –** California Energy Commission (CEC) Staff presented on the 2024 Test Year load forecasting process at the September 7 workshop on the LSE Showing Tool. ED Staff included LSEs' Slice of Day Test Year load forecasts in the LSE Showing Tool templates transmitted on October 6, October 24, and November 9. In response to some LSEs' concerns regarding their Slice of Day load forecasts, CEC and ED Staff solicited informal comments on possible adjustments to the load forecasting process adopted in D.23-04-010 for Compliance Year 2025 through December 1.

   Please provide any additional comments on the currently adopted load forecasting process.

SCE recommends that the Commission hold a public workshop early next year with the CEC to help stakeholders better understand how the SoD forecast process worked for 2024 RA allocation, to allow for stakeholder feedback to enhance the 2025 year-ahead SoD forecast process.

6. **Slice of Day Allocations –** LSEs' initial Cost Allocation Mechanism (CAM), Central Procurement Entity (CPE), demand response (DR), and Integrated Resource Planning (IRP)/Modified Cost Allocation Mechanism (MCAM) allocations were included in the LSE Showing Tool templates transmitted to LSEs on October 6. Staff transmitted revised allocations to LSEs on October 24 (these revised allocations were included in the November 9 templates as well).

   Please provide any comments on the most recently distributed (October 24) Slice of Day allocations.

SCE does not have any comments.

7. **Slice of Day Year Ahead Showings –** All CPUC-jurisdictional LSEs were required to submit Slice of Day Year Ahead test showings on November 30, 2023.

   Please provide any comments on the Year Ahead showing process/experience.

SCE does not have any comments.

8. **Other Comments –** If you have additional comments that do not pertain to the above topics, please provide them here.

Since the wind and solar profiles used in the SoD already incorporate outage information, in order to put all resources in on a level playing field, UCAP should be adopted.

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Via E-Mail
December 22, 2023

Kelsey Choing
Electric Market Design Section
California Public Utilities Commission
kelsey.choing@cpuc.ca.gov

Re: Slice of Day Implementation - Final Round of Informal Comments

Dear Ms. Choing:

Shell Energy North America (US), L.P. dba Shell Energy Solutions ("Shell Energy") hereby responds to the Energy Division's ("Staff") email dated December 6, 2023, which requests that LSEs submit stakeholder input on Slice of Day program implementation prior to the release of Staff's report on February 1, 2024. Shell Energy appreciates the opportunity to provide feedback on Slice of Day implementation, while also noting the difficulty inherent in such an implementation. With that in mind, Shell Energy submits comments related to two topics: the LSE Showing Tool and the load forecasting process.

Load Serving Entity (LSE) Showing Tool

As a preliminary matter, errors remain in the Showing Tool. Specifically, the 'Profile Optimization' tab instructions are mismatched to the layout, making it difficult to navigate with any degree of confidence. Additionally, errors and discrepancies with resource IDs & NQCs need to be corrected and consistent for queries to work properly.

Improved ease-of-use for the showing tool is of great value, particularly regarding entry of hybrid & storage resources. Shell Energy encourages Staff to continue addressing this through further guidance via workshop, webinar or additional office hours.

Load Forecasting Process

Shell Energy is concerned with the known issue regarding several LSEs' SOD requirements diverging from historical load shapes due to large pro rata adjustments made during the load forecast process, subsequently affecting early morning hours and off-peak months. This was first highlighted in the form email sent by staff along with the LSE-specific showing templates on November 9, and further detailed in the informal comments submitted to Staff by AReM on December 1. Shell Energy largely agrees with those comments; i.e., pro-rata load adjustments

that shift hourly obligation away from ESPs true load shapes are counter to the intent of the Slice of Day Program, and an LSE's obligation should be reflective of its own load shape. Shell Energy encourages Staff to investigate and correct any errors of this kind prior to 2025 load forecast generation.

We hope these comments will assist in Staff's continued improvement of Slice of Day implementation. Please do not hesitate to reach out with any questions.

Respectfully submitted,

Eric Gibbons
Shell Energy North America (US), L.P.

Slice of Day Implementation – Final Round of Informal Comments

In accordance with Decision (D.) 23-04-010, Energy Division Staff ("Staff") solicited informal feedback from parties following several Slice of Day implementation milestones throughout 2023. Prior to submittal of the February 1, 2024 Slice of Day Implementation Report, Staff provide this final opportunity for parties to submit informal comments on the various implementation milestones and subsequent material updates. Additionally, Staff appreciate comments on possible implementation barriers and potential solutions.

Party Name: Silicon Valley Clean Energy

Contact Information:

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1. **Master Resource Database (MRD) –** Staff released the most recent version of the MRD to parties on July 7 and solicited informal comments through July 28. Staff released an updated MRD on October 4.

   Please provide any comments on the most recent version (October 4) of the MRD.

   In July of 2023, SVCE reviewed its resources in the MRD and provided initial feedback to Staff correcting errors associated with SVCE owned projects. In November of 2023, ahead of the test year year-ahead filing, SVCE Staff found numerous errors in the LSE Showing Tool that could not be readily explained, several of which are outlined below. When reviewing the errors with Energy Division Staff on November 28th, it became apparent that many of the errors tied back to issues in the MRD that were not easily identifiable due to the complexity of the tool.

   Specifically, prior to the November 30 deadline for draft showings, SVCE identified that changes made to the template from version 23 to the current version 25, result in VER resource exceedance profiles being incorrectly optimized. When reviewing with Energy Division Staff during the same November 28th meeting, it was identified that the mapping of hybrid resources using "Hybrid" as a fuel source was not flowing through to all necessary formulas for a correct showing.

   SVCE also found that the Showing Tool optimized a gas resource as a 4-hour BESS resource despite the resources' entry into the MRD apparently being correct. This instance occurred in just one version of the SVCE five-month filing, yet the error appeared untraceable in the template's logic, due to the complexity of the tool. SVCE found that the Showing Tool validation

that checked against the use of a custom profile would fail if the custom profile differed from that of the tool's. It is unclear to SVCE if this error is a result of the MRD, the Showing Tool, or mapping between the two. The CPUC template may need to add additional fields that clarify which exceedance profile is used on a custom profile (e.g., Solar Tracking, Socal).

To help mitigate such errors, SVCE recommends that Staff develop an on-going process for validating resource assumptions that includes a transparent mapping of how data points from the MRD flow into the LSE Showing Tool to ensure accuracy.

2. **Exceedance Analysis/Profiles –** Staff released its initial exceedance analyses and resulting profiles for wind and solar resources on July 20 and solicited informal comments from parties through August 10. In response to informal comments, Staff released revised exceedance analyses and profiles to parties on October 13; these profiles were included in the October 4 version of the MRD.

   Please provide any comments on the most recent version (October 4) of the wind and solar exceedance analyses/profiles.

SVCE has no specific comments on the exceedance profiles at this time. However, additional changes to any elements of the accounting rules create uncertainty for LSEs and the broader market. As discussed in response to question number eight below, SVCE strongly encourages the CPUC to provide regulatory certainty in the near-term to help minimize complexity and risk in an already complex market.

3. **Load Serving Entity (LSE) Showing Tool –** Staff released its initial LSE Showing Tool for Slice of Day test filings on August 30 and held a workshop on the tool on September 7. Staff further transmitted updated LSE Showing Tool templates containing LSE RA requirements and allocations on October 6, October 24, and November 9. Additionally, Staff held a series of Office Hours on September 21, October 19, and November 16 for purposes of answering questions regarding LSEs' templates.

   Please provide any comments on the most recent version (November 9) of the LSE Showing Tool.

A. **SVCE recommends that Staff utilize its resources to focus in the near-term on addressing errors in the tool necessary for compliance in 2025 and prioritize these changes and clarifications over further refinement of the optimization tool.**

SVCE appreciates Staff's ongoing efforts to improve the LSE Showing Tool. However, the tool continues to contain technical problems that need to be addressed in the near-term in order to ensure a smooth transition to the new RA framework. Among these are apparent errors in the validation checks stemming, at least in part, from mapping errors in the resource profiles.

B. SVCE urges Staff to provide a clear check list of requirements for compliance that does not rely on the validation tool, at least until such time as the validation tool can be fixed.

SVCE has found several mapping errors, which cause false errors in the Showing Tool validation checks. In addition to the example in response to question number one, in the November 30 test year filing, SVCE noted that the optimization algorithm for September 2023 optimized a resource beyond its interconnection limit, which prompted the validation check to fail. However, the resource did not need to be optimized, as there was other available BESS that would have satisfied the short position, leading to a compliant filing that did not violate any BESS constraints. Given that several of the checks in the "Validation Overview" tab fail erroneously and are in need of further review, it is unclear that "passing" all of these checks is a sufficient signal that an LSE is compliant. For this reason, it is imperative that Staff provide load serving entities with a check list of compliance requirements, independent of solely the validation tool.

Additionally, there remain on-going issues with the Excel macros built into the Showing Tool. During the CPUC review of SVCE's test-year showing, Staff contacted SVCE regarding an error in the showing. However, SVCE could not identify the error. After further discussion with Staff, it was determined that the error was due to the macro not being run by CPUC Staff. Thus, there appeared to be an error when, in fact, after the macro ran, the error was cleared. LSE's need clear guidance on how to submit their showings to prevent these types of errors.

While the optimization tool provides some value to LSEs, SVCE believes CPUC Staff should refocus their efforts on creating a stable compliance tool given on-going errors. The role of the CPUC, as the entity regulating compliance, is to explicitly clarify the rules and checks to ensure LSEs have certainty that their optimizations will be accepted, while LSEs should be the ones to provide optimization of their portfolios. SVCE requests that the CPUC provide clear guidance in the near-term on what criteria LSEs will be held to for compliance, to ensure LSEs' own optimizations are compliant.

LSEs have already begun procuring for the 2025 compliance year and urgently need a stable tool well in advance of compliance deadlines to allow procurement teams to meet RA obligations. If Staff cannot provide a clear and binding set of guidelines for optimization compliance well in advance of the 2025 Year Ahead Filing, the Commission should be flexible when assessing battery optimization compliance, especially if it is determined that sufficient resources exist to meet the battery charging requirement in aggregate.

4. **Planning Reserve Margin (PRM) Calibration Tool –** Staff released its initial PRM Calibration Tool on October 24, held a workshop on the tool on October 25, and solicited informal comments through November 10. Staff released a revised PRM Calibration Tool and resulting PRM on November 17.

   Please provide any comments on the most recent version (November 17) of the PRM Calibration Tool and resulting PRM.

The PRM sent on November 17th appears to be directionally correct; however, the persistent changes to the PRM in the RA proceeding are a challenge for LSE planning. Additionally, while some of the causes behind the calculation error were made apparent during the PRM calibration workshop, there was little transparency into how Energy Division corrected the battery dispatch error or reassurances that the new PRM is accurate.

SVCE Staff recognizes that errors and mistakes in data occur, but the ad-hoc PRM development process of recent years being followed with an unstable, radically shifting PRM is concerning. One of the principles behind the development of the Slice of Day program was that of durability. If LSEs and marketers do not have the ability to understand and plan for expected changes in the PRM long-term planning is made more challenging. This would impact the Commission's ease of implementation and affordability RA principles as continued uncertainty in the market only complicates achieving both.

SVCE encourages the Commission to realistically assess the resources – staffing, time and tools – needed to ensure this transition can take place without undue or unforeseen events occurring to impact the timely transacting of Resource Adequacy. The Slice of Day framework is a more complex framework. This will require both regulators and market participants to employ more resources to manage positions, debug issues, and assess the impacts of regulatory changes.

5. **Load Forecasting Process –** California Energy Commission (CEC) Staff presented on the 2024 Test Year load forecasting process at the September 7 workshop on the LSE Showing Tool. ED Staff included LSEs' Slice of Day Test Year load forecasts in the LSE Showing Tool templates transmitted on October 6, October 24, and November 9. In response to some LSEs' concerns regarding their Slice of Day load forecasts, CEC and ED Staff solicited informal comments on possible adjustments to the load forecasting process adopted in D.23-04-010 for Compliance Year 2025 through December 1.

   Please provide any additional comments on the currently adopted load forecasting process.

SVCE has no comments on the load forecasting process.

6. **Slice of Day Allocations –** LSEs' initial Cost Allocation Mechanism (CAM), Central Procurement Entity (CPE), demand response (DR), and Integrated Resource Planning (IRP)/Modified Cost Allocation Mechanism (MCAM) allocations were included in the LSE Showing Tool templates transmitted to LSEs on October 6. Staff transmitted revised allocations to LSEs on October 24 (these revised allocations were included in the November 9 templates as well).

   Please provide any comments on the most recently distributed (October 24) Slice of Day allocations.

SVCE requests that the Commission direct the CPE to provide clarification on what is in the CPE portfolio as soon as is feasible, including the resource type to account for the resource profile in their hourly needs. Having basic requirements for each CPE to provide the same information to the LSEs they are procuring for should be a standard practice, otherwise certain LSEs will be disadvantaged by the level of transparency each CPE provides.

7. **Slice of Day Year Ahead Showings –** All CPUC-jurisdictional LSEs were required to submit Slice of Day Year Ahead test showings on November 30, 2023.

   Please provide any comments on the Year Ahead showing process/experience.

As noted in response to question number three in this document, SVCE urges Staff to utilize their existing resources to fix errors in the compliance tool, create greater visibility in the mapping and PRM development process, and provide clear guidance on energy validation checks, or fix the validation checks in the tool in the very near term.

LSEs need a stable compliance tool well in advance of the initial compliance year. Given the on-going edits to the tool, SVCE suggests that the Commission consider an "off-ramp" date well in advance of the 2025 YA filing deadline. Given the schedule outlined in the December 18th Ruling, SVCE suggests this occur no later than June 2024 as part of the Track 1 Decision. SVCE encourages the Commission to keep to the schedule in the ruling and finalize all necessary issues for SOD implementation by June of 2024. If by June 2024 there remain errors in compliance tools or uncertainty in the PRM translation, exceedance profiles, or other key factors of the RA structure, then SVCE suggests that the 2025 year be used as an additional test year, with LSEs providing both the Year Ahead and all Month Ahead filings using both compliance structures.

8. **Other Comments –** If you have additional comments that do not pertain to the above topics, please provide them here.

SVCE cautions that the initial Year Ahead showings only demonstrated the open issues in the compliance tools and do not speak to the viability of SOD implementation from a market, contracting or transaction perspective. SVCE urges Staff to consider options for on-going market assessments and monitoring as part of the Test Year to help better understand how this transition is impacting the market and customer affordability.

Beyond the need for market development, SVCE notes that there are still outstanding issues as it relates to contract structure under the new RA paradigm. Issues such as substitution and replacement of product remain unclear and not resolved. By having resources not valued at a single quantity replacement, substitution can only be done by resources that have a similar hourly shape. This will make the replacement of RA under a contracting structure much more difficult as market participants will need to replace RA with resources with similar, or superior, profiles. More broadly, the specific contractual terms under SOD do not appear to be standardized across the market and it will take time for buyers and sellers to develop confirmation agreements that meet the requirements of the program and parties' needs.

The changes to the RA structure shifted the RA market from transacting one well understood product, to several distinct capacity products. This has made a market already short on supply even more illiquid. Additionally, as SVCE has procured for the 2024 test year and 2025 compliance year, it has become clear that many market participants lack a clear understanding of the new compliance framework. Fundamentally, not having a standard monthly quantity value has made it much more difficult to transact as sellers are unsure of the underlying value of their resource, especially as each buyer has a unique set of resource needs. Additionally, by not standardizing the monthly value of a resource LSEs will be forced to over procure, which will erode the proposed value of a bottom-up approach. This friction will not improve unless the available supply can perfectly match the needed demand curve of every load serving entity.

Given the likely difficulties with market transactions as the new framework is implemented, SVCE encourages Staff to monitor the RA market during the test year to ensure the new framework's viability and readiness is being judged not just on the basis of the functionality of the compliance tools but also on the basis of the preparedness of the market.

APPENDIX C

INFORMAL COMMENTS ON EXCEEDANCE ANALYSIS

The Public Advocates Office's Informal Comments on the Energy Division's Master Resource Database Draft 2

R.21-10-002

Submitted by	Organization	Date Submitted
Kyle Navis Senior Analyst Patrick Cunningham Senior Analyst Phone: (415) 703-2840 Email: kyle.navis@cpuc.ca.gov	Public Advocates Office - California Public Utilities Commission 505 Van Ness Avenue San Francisco, CA 94102	August 10, 2023

The Public Advocates Office at the California Public Utilities Commission (Cal Advocates) submits the following informal comments on the Master Resource Database Draft 2 (MRD2). These informal comments review Cal Advocates' concerns with the exceedance profiles presented in the second draft of the Master Resource Database, clarify the discriminatory outcomes resulting from the selected exceedance values, recommend important edits, and provide two alternative approaches that would comply with Energy Division's interpretation of Decision (D.) 23-04-010. Cal Advocates notes:

- The Energy Division should hold a stakeholder workshop to clarify its interpretation of D.23-04-010 and justify its selected exceedance values;
- The current exceedance values discriminate by technology, region, and season;
- Selecting the 50% exceedance profile from the Top 5 Day sample fits with Energy Division's interpretation of D.23-04-010 and yields preferable profiles;
- Energy Division should not allow round number bias to affect its selection of exceedance profiles;

- Another alternative counting approach would equalize risk across these factors; and
- The "Max value" cells on the "Comparison" tabs show incorrect values in many cases.

I. The Energy Division should hold a stakeholder workshop to clarify its interpretation of D.23-04-010 and justify its selected exceedance values.

Cal Advocates' previous informal comments requested that Energy Division hold a public workshop to provide vital context to the workbooks that Energy Division circulated to the Rulemaking 21-10-002 service list on July 20, 2023 ("the workbooks"). Bilateral discussions with several other stakeholders in the intervening weeks have confirmed that there is abundant confusion about how Energy Division is implementing its interpretation of D.23-04-010. Nonetheless, it appears that the exceedance-driven values in the Master Resource Database Draft 2 are not informed by the extensive record from the Slice of Day Working Groups. Specifically, while Energy Division provided the workbooks to show how it selected exceedance profiles, the workbooks lack the necessary context for stakeholders to understand how Energy Division selected the final exceedance level. Based on the information provided it appears that Energy Division used an "eyeball" approach to select new exceedance profiles.[1] This would be inappropriate after stakeholders invested dozens of hours in working groups to vet exceedance proposals.

II. The current exceedance values discriminate by technology, region, and season.

The current exceedance values result in the heterogenous treatment of different technologies, regions, and seasons. Cal Advocates reviewed the maximum positive diversion (darkest red) from the Top 5 Day profile across each of the "Comparison" tabs in the workbooks.[2] Table 1 compiles the maximum month-hour difference between the Top 5 Day profile and the exceedance profile of each technology-location-season triad. Energy Division's proposed exceedance values tolerate much higher differences during the summer season (5.5% weighted average) compared to the non-summer season (1.9%). The lower differences indicate that the selected exceedance profiles yield even-more-conservative resource values during non-summer months compared to summer months. This dynamic befuddles expectations given that most periods of reliability risk occur during summer

[1] The "eyeball" approach uses visual cues to es□mate appropriate exceedance levels rather than op□mizing risk or using error-minimiza□on techniques to yield more equal treatment of different seasons, regions, and technologies. Cal Advocates' primary objec□on to this approach is that it relies heavily on subjec□ve interpreta□ons and preferences rather than quan□ta□ve techniques that are more consistent, transparent, and predictable.

[2] See Sec□on VI for a set of minor correc□ons that are necessary and will add clarity to this approach.

months.[3] If Energy Division finds a weighted average difference of 5.5% acceptable, at the very least it should calibrate the non-summer results to be no lower than 5.5% because non-summer is typically a period of less reliability risk.

Table 1: Maximum Difference Between Top 5 Day Profile and Selected Exceedance Profile[4]–

Technology	Location	Summer	Non-Summer
Solar Fixed	North	6.3%	0.0%
Solar Fixed	South	2.7%	3.6%
Solar Tracking	North	7.3%	3.4%
Solar Tracking	South	9.4%	3.9%
Solar Thermal	South	7.5%	3.5%
Wind	North	0.8%	2.4%
Wind	South	3.8%	1.1%
Wind	AZ-NM	5.1%	3.7%
Wind	WA-OR	5.0%	-0.7%
Capacity-Weighted Average	-	5.5%	1.9%

III. Selecting the 50% exceedance profile from the Top 5 Day sample fits with Energy Division's interpretation of D.23-04-010 and yields preferable profiles.

A straightforward solution to stakeholders concerns is available to Energy Division that will both comply with D.23-04-010 and lead to more rational profiles. Energy Division could select the 50% exceedance profile (i.e., median) from the sub-sample of Top 5 Days (plus any Flex Alert days that were not captured by the Top 5 metric) for each month. This approach is simple, intuitive, and complies with the requirement to use an exceedance profile. Using the 50% exceedance level in the Top 5 Day sample complies with D.23-04-010 by selecting an exceedance value from the required sample.[5]

Additionally, this approach would allay growing stakeholder concerns about unduly penalizing variable energy resources by arbitrarily and subjectively selecting an exceedance level. One of the few points of consensus that emerged from the slice of day working groups was agreement that any

[3] In fact, the non-summer exceedance values for WA-OR wind yield values that are *never* higher than the Top 5 Day profile.

[4] Table 1 data is based on a review of the "Comparison" tabs in the workbooks distributed by Energy Division on July 20, 2023.

[5] Decision 23-04-010 directed Energy Division to develop solar and wind resource profiles using PG&E's Top 5 Day methodology. See D.23-04-010, *Decision on Phase 2 of the Resource Adequacy Reform Track*, April 6, 2023, Conclusion of Law 5 at 104-105. Cal Advocates' July 28, 2023 informal comments discuss the ambiguity in this language.

exceedance profile should be benchmarked and selected using a high load day profile.[6] Selecting the 50% exceedance profile (i.e., median) from that high load day sample would address many stakeholders' concerns.

Cal Advocates calculated the Top 5 Day 50% Exceedance Profile approach using the two workbooks[7] and attaches revised workbooks to these comments. Table 2 shows the maximum differences between the Top 5 Day Profile (i.e., average) and the 50% exceedance level (i.e., median) at the triad level. Using the latter approach reverses (and rationalizes) the summer vs. non-summer maxima dynamic; the weighted average maximum summer divergence is 4.5% compared to 5.5% in Energy Division's workbooks. Conversely, it increases the weighted average maximum difference to 9.3% during non-summer months, which is reasonable because non-summer months have lower reliability risk.

Table 2: Maximum Difference Between Top 5 Day Profile (Average) and Top 5 Day 50% Exceedance Profile (Median)[8]

Technology	Location	Summer	Non-Summer
Solar Fixed	North	6.3%	10.2%
Solar Fixed	South	3.9%	6.6%
Solar Tracking	North	7.6%	14.5%
Solar Tracking	South	6.4%	9.2%
Solar Thermal	South	15.7%	10.7%
Wind	North	7.3%	5.0%
Wind	South	1.2%	5.3%
Wind	AZ-NM	8.1%	10.6%
Wind	WA-OR	1.2%	11.6%
Weighted Average	-	4.5%	9.3%

Table 3 shows the change in NQC megawatt (MW) terms between Energy Division's exceedance profiles and the Top 5 Day 50% exceedance profile. The Top 5 Day 50% exceedance profile is *more conservative* than Energy Division's exceedance profiles in summer months but frees up over 2,300 MWs of NQC during non-summer months. While this approach still does not reflect Cal

[6] Workshop Report on Final Proposals from Reform Track Phase 2 Workstreams 1 – 3 Submited by Pacific Gas and Electric Company (U 39 E), (SoD WG Report), November 15, 2022 at 76. Available at: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/resource-adequacy-homepage/resource-adequacy-compliance-materials/resource-adequacy-history/genera□onresourceadequacy_20221114.pdf.

[7] This refers to the two workbooks e-mailed to the R.21-10-002 service list by Energy Division on July 20, 2023.

[8] Table 2 data is compiled based on the revised workbooks Cal Advocates ataches to these comments.

Advocates' interpretation of D.23-04-010 and overall preference for renewable resource counting, it nonetheless represents an incremental improvement upon Energy Division's exceedance profiles.

Table 3: Changes in Maximum NQC Difference for Switching from Energy Division's Exceedance Profiles to the Top 5 Day 50% Exceedance Profile (MW)

Technology	Location	Summer	Non-Summer
Solar Fixed	North	0	188
Solar Fixed	South	51	125
Solar Tracking	North	7	287
Solar Tracking	South	-182	322
Solar Thermal	South	82	72
Wind	North	95	38
Wind	South	-124	202
Wind	AZ-NM	56	128
Wind	WA-OR	-303	974
All combined (net)	-	-318	2,334

IV. Energy Division should not allow round number bias to affect its selection of exceedance profiles.

The exceedance levels selected by Energy Division for solar and wind resources all end with a "0" or "5" digit, giving an appearance of uniformity in their treatment of different resources. However, these levels result in highly divergent results for each technology-location-season triad in terms of the risk levels that they yield (as described in Section III). Thus, while the workbook inputs look consistent, the outputs resulting from them are very heterogenous and leave substantial potential Net Qualifying Capacity (NQC) unavailable to Load-Serving Entities (LSEs). The use of blocky, rounded exceedance profiles directly harms ratepayers by reducing NQC available to the resource adequacy market and ignores the substantial analysis in the record of the WGs.[9] Energy Division should look to the WG record to set more appropriate exceedance levels.

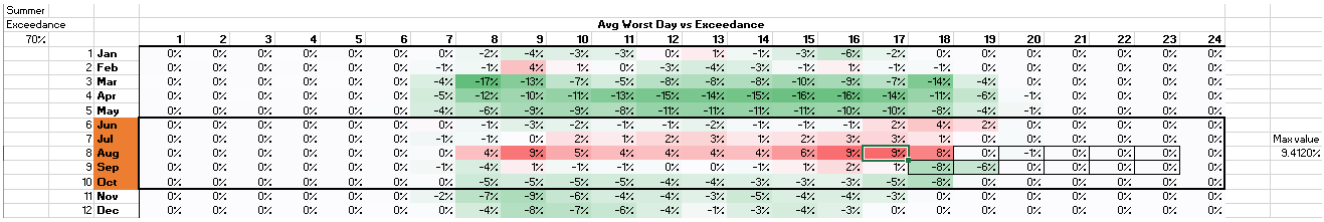
V. Another alternative counting approach would equalize risk across these factors.

A second alternative approach to selecting exceedance profiles that would improve on Energy Division's results would select the exceedance profile that homogenizes risk due to "overcounting" across all technologies, regions, and seasons. Energy Division could calibrate the exceedance profiles for each triad to fit with its already-identified tolerable level of risk, which is the largest month-hour positive difference in Energy Division's exceedance profiles. This maximum, which occurs in

[9] SoD WG Report at 24-77.

August HE17 for Tracking Solar in Southern California, is reproduced in Figure 1 below.[10] Notably, 9.4% of the final installed capacity of Tracking Solar in Southern California represents 572 MW of nameplate capacity.[11]

Figure 1: Largest Month-Hour Positive Difference in ED's Exceedance Profiles



Summer Exceedance 70%		Avg Worst Day vs Exceedance																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Jan	0%	0%	0%	0%	0%	0%	0%	-2%	-4%	-3%	-3%	0%	1%	-1%	-3%	-6%	-2%	0%	0%	0%	0%	0%	0%	0%
2	Feb	0%	0%	0%	0%	0%	0%	-1%	-1%	4%	1%	0%	-3%	-4%	-3%	-1%	1%	-1%	-1%	0%	0%	0%	0%	0%	0%
3	Mar	0%	0%	0%	0%	0%	0%	-4%	-17%	-13%	-7%	-5%	-8%	-8%	-8%	-10%	-9%	-7%	-14%	-4%	0%	0%	0%	0%	0%
4	Apr	0%	0%	0%	0%	0%	0%	-5%	-12%	-10%	-11%	-13%	-15%	-14%	-15%	-16%	-16%	-14%	-11%	-6%	-1%	0%	0%	0%	0%
5	May	0%	0%	0%	0%	0%	0%	-4%	-6%	-9%	-9%	-8%	-11%	-11%	-11%	-11%	-10%	-10%	-8%	-4%	-1%	0%	0%	0%	0%
6	Jun	0%	0%	0%	0%	0%	0%	0%	-1%	-3%	-2%	-1%	-1%	-2%	-1%	-1%	-1%	2%	4%	2%	0%	0%	0%	0%	0%
7	Jul	0%	0%	0%	0%	0%	0%	-1%	-1%	0%	2%	1%	2%	3%	1%	2%	3%	3%	1%	0%	0%	0%	0%	0%	0%
8	Aug	0%	0%	0%	0%	0%	0%	0%	4%	9%	5%	4%	4%	4%	4%	6%	9%	9%	8%	0%	-1%	0%	0%	0%	0%
9	Sep	0%	0%	0%	0%	0%	0%	-1%	-4%	1%	-1%	-1%	0%	0%	-1%	1%	2%	1%	-8%	-6%	0%	0%	0%	0%	0%
10	Oct	0%	0%	0%	0%	0%	0%	0%	-5%	-5%	-5%	-5%	-4%	-4%	-3%	-3%	-3%	-5%	-8%	0%	0%	0%	0%	0%	0%
11	Nov	0%	0%	0%	0%	0%	0%	-2%	-7%	-9%	-6%	-4%	-4%	-3%	-5%	-4%	-4%	-3%	0%	0%	0%	0%	0%	0%	0%
12	Dec	0%	0%	0%	0%	0%	0%	0%	-4%	-8%	-7%	-6%	-4%	-1%	-3%	-4%	-3%	0%	0%	0%	0%	0%	0%	0%	0%

Max value 9.4120%

The Energy Division could then use 9.4% as an upper bound for divergence tolerance, akin to a risk budget.[12] The next step would be to iterate the exceedance level used for each triad until it shows a maximum difference for the applicable season that is less than or equal to 9.4%.

VI. The "Max value" cells on the "Comparison" tabs show incorrect values in many cases.

Each of the "Comparison" tabs in the two workbooks circulated on July 20, 2023 feature "Max value" cells to the right of each table titled "Average Worst Day vs. Exceedance." However, the current formulation of these cells displays the maximum difference between an exceedance profile and the Top 5 Day profile for *all* months in each table, rather than just the months in the applicable summer or non-summer season. For example, cells AC27 and AC41 on tab "Solar_Comparison (North)" report the max value for all month-hours. These cells should only show the maximum value for the correct month-hour matrices (i.e., summer and non-summer months, respectively). This is true of all "_Comparison" tabs in both the InState SolarWind and OOS Wind workbooks. Insofar as these cells inform the selection of the exceedance value for a given season, they are likely to lead to selecting excessively conservative non-summer exceedance values because the maxima the cells report cover incorrect non-seasonal months. Cal Advocates' revised workbooks incorporate this change.

VII. Conclusion

[10] See tab "Solar_Comparison (South)" cell T79.

[11] Coincidentally, Tracking Solar in Southern California also has the largest nameplate amount of installed capacity of any technology-region pairing inside California at 6,076 MW.

[12] The risk budget assumes that ED is willing to tolerate overcoun[illegible]ng rela[illegible]ve to the Top 5 Day profile by the smallerof 9.4% in terms of capacity factor or 572 MW of installed capacity.

Cal Advocates requests the Commission adopt the recommendations herein. Please contact Kyle Navis with any questions or comments at kyle.navis@cpuc.ca.gov.

INFORMAL COMMENTS OF THE
CALIFORNIA WIND ENERGY ASSOCIATION
ON THE ENERGY DIVISION'S MASTER RESOURCE DATABASE DRAFT 2

R.21-10-002

August 10, 2023

The California Wind Energy Associa□on (CalWEA) submits these informal comments on the Master Resource Database Dra□ 2 (MRD2), in which Energy Division (ED) calculated and presented exceedance profiles for variable energy resources (VERs), represen□ng ED's de facto implementa□on of the methodology for determining wind and solar qualifying capacity values adopted by the Commission in D.23-04-010.

CalWEA applauds and supports the thorough analysis of this mater conducted by the CPUC's Public Advocates Office (Cal Advocates), reflected in its July 28, 2023, informal comments. CalWEA endorses important recommenda□ons made in that document, which CalWEA expects Cal Advocates to make in its August 10, 2023, comments.

Specifically, CalWEA endorses the following recommenda□ons and points made by Cal Advocates:

- The exceedance levels in the MRD2 appear to be selected en□rely at ED's discre□on, without reference to the analysis and ve□ng undertaken by stakeholders during the Working Group process or to a fair and reasonable reading of the Commission's reference to "PG&E's Top 5 Day methodology" in view of PG&E's final recommenda□on.

- ED should follow the clearest and most reasonable reading of D.23-04-010 and u□lize the Top 5 Day[1] load profile as the exceedance profile for solar and wind resources.

- If ED believes it necessary to select an exceedance level, it should select the median value (50% exceedance profile) from the Top 5 Day sample for each month, which is consistent with Energy Division's interpreta□on of D.23-04-010 (with which CalWEA disagrees) as requiring the applica□on of an exceedance level.

- If ED intends to proceed with its proposed novel exceedance values in the MRD2, it should hold a stakeholder workshop to show how it selected the exceedance levels and to obtain stakeholder feedback.

ED's arbitrary approach would unduly penalize wind and solar resources for their qualifying capacity contribu□on. In effect, as we expect NRDC will elaborate, Energy Division's arbitrary approach penalizes wind and solar resources rela□ve to the RA values for thermal resources.

Lastly, CalWEA flags the need, for the next cycle, to evaluate the dis□nct Baja California wind resource area as a separate area for QC-determina□on purposes.

Contacts: Nancy Rader, nrader@calwea.org
Dariush Shirmohammadi, dariush@gridbright.com

[1] Use of the term "Top 5 Day" approach is intended to addi□onally include Flex Alert days, per D.23-04-010.

INFORMAL COMMENTS OF THE NATURAL RESOURCES DEFENSE COUNCIL ON SLICE OF DAY RENEWABLE RESOURCE PROFILES R. 21-10-002

August 10, 2023

I. Introduction

The Natural Resources Defense Council (NRDC) appreciates the opportunity to provide informal comments on the solar and wind exceedance analyses pursuant to D.23-04-010. NRDC appreciates the efforts of Energy Division staff to implement the decision, and provides these comments in support of contextualizing current and future policy decisions regarding resource counting rules.

The current resource counting rules are disconnected from the modeling inputs and results utilized in both the Integrated Resource Plan and Resource Adequacy programs to analyze the reliability performance of clean energy resources and are analyzed through a process, exceedance, which structurally disadvantage clean energy resources. NRDC is concerned that the current process will not lead to the intended goal of improved accuracy and durability emphasized in the transition to Slice of Day, and encourages the Commission to prioritize the development of resource counting rules for 2025 and beyond which are better tethered to probabilistic reliability modeling approaches used elsewhere within the reliability policy ecosystem.

2. Resource Counting Policy Background

Slice of Day is a novel resource adequacy counting structure which has not yet been fully implemented in any jurisdiction. As such, inherent within the development of Slice of Day are many policy, data, and methodological questions. Chief among these are how to accurately count reliability contributions of resources and how to establish the Planning Reserve Margin, two interconnected efforts which must align to effectively and efficiently achieve the program's reliability goals.

Accurate resource counting rules are essential to long-term program success. Accuracy, meaning the degree to which a resource profile effectively represents its contributions to reliability, may be measured as the impact of the addition or removal of a resource on the corresponding calibrated Planning Reserve Margin (PRM). To the extent a resource's addition to the portfolio increases the corresponding PRM, it is likely the resource is overcounted, and the

resource profile will not be durable in the long-term; if the resource's addition reduces the PRM, it is likely that the resource's accredited value is undercounted. This echoes the concept of 'perfect capacity' in a monthly or annual Effective Load Carrying Capability (ELCC) framework, and the hourly ratings for each resource should approximate the 'perfect capacity' available from that resource in any given hour.

To estimate hourly perfect capacity, the Commission adopted a methodology within D.23-04-010 to benchmark hourly performance during days of critical reliability concern, a process known as the "Top 5" methodology developed by PG&E. The Commission's approach identifies the five highest load days in each month of the dataset (2017-2022), adds any other days with CAISO events, and develops month-hour averages to develop benchmark profiles for each month. As a final step, the Top 5 proposal includes a translation from the benchmark profiles to an exceedance value and "select the exceedance level that results in minor differences between that level and the high-load day profile in loss of load hours."[1]

3. Concerns with Exceedance Translation Step

As noted in the Decision NRDC has previously raised the concern that the exceedance matching step "causes errors in all hours for which the exceedance methodology is not well-matched for peak day results."[2] This is an inherent function of exceedance matching, at least at the seasonal or monthly level, in which no individual exceedance value can effectively align the exceedance profiles with Top 5 profiles. Unfortunately, NRDC's concerns are borne out within the analysis performed by Energy Division.

In the attached slides, NRDC provides analysis of the magnitude of this mismatch between Top 5 profiles and proposed exceedance values for each resource and month. NRDC's analysis illustrates the lost value, on both an hourly capacity and aggregated daily capacity basis (as a proxy for energy availability for storage charging). An illustration of the hourly capacity value lost between the benchmark and the translated exceedance value is included below for Northern California wind resources.

[1] D.23-04-010, p. 21
[2] D.23-04-010, p. 25

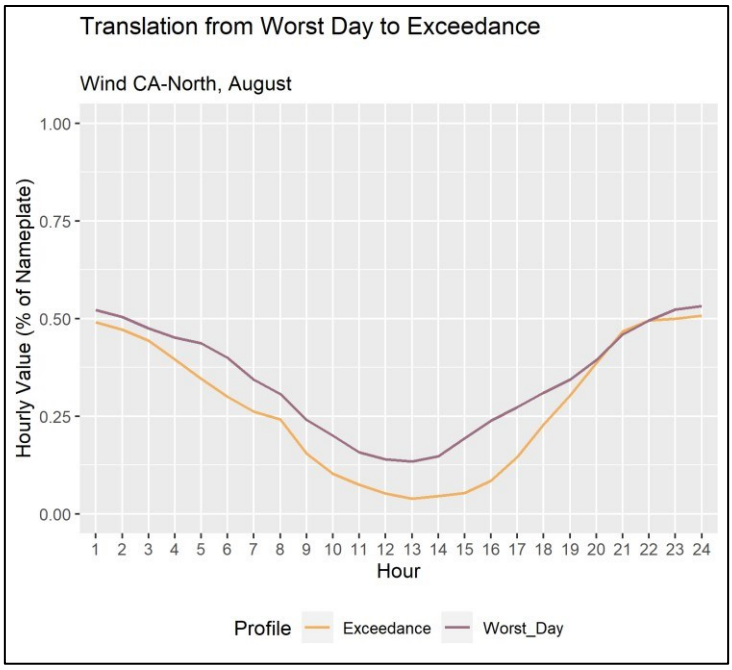


Figure 1: Capacity Value Lost to Exceedance Translation Step

This represents approximately 29% of the wind resources' capacity value in August. The effect is similar for other wind resources, which are illustrated below.

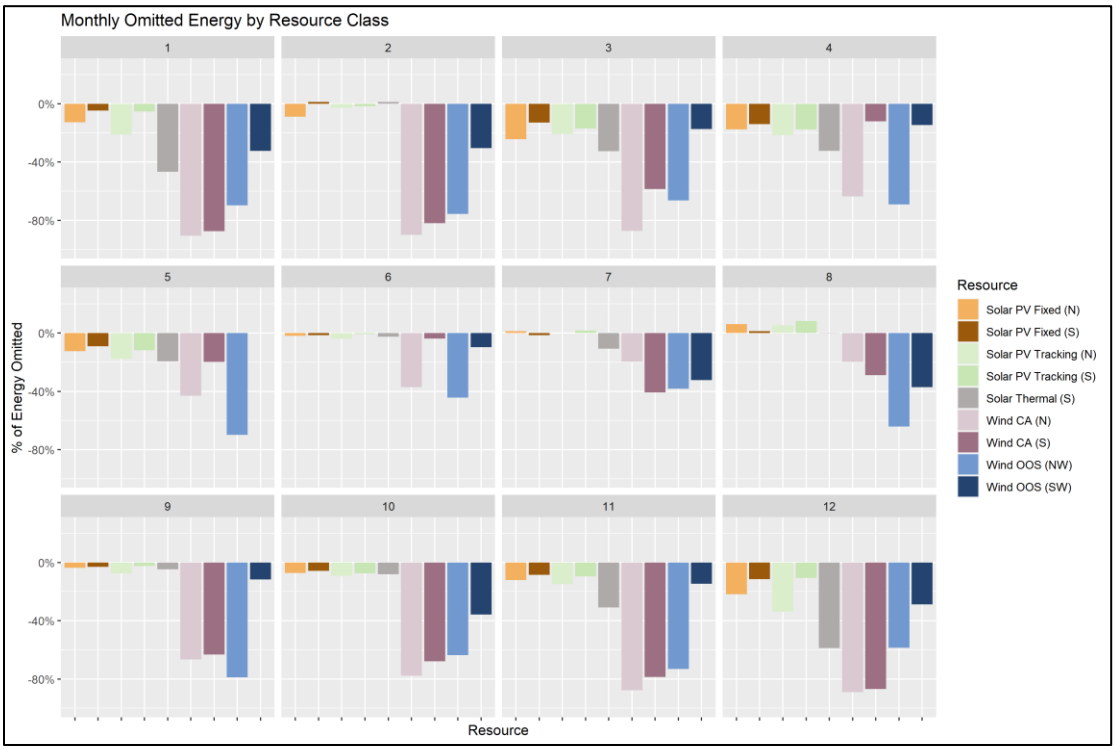


Figure 2: Aggregate Monthly Energy Lost to Exceedance Translation Step by Resource

While this effect is more modest with solar resources, it introduces other issues – for instance, tracking solar photovoltaics are valued above their Top 5 benchmark in August.

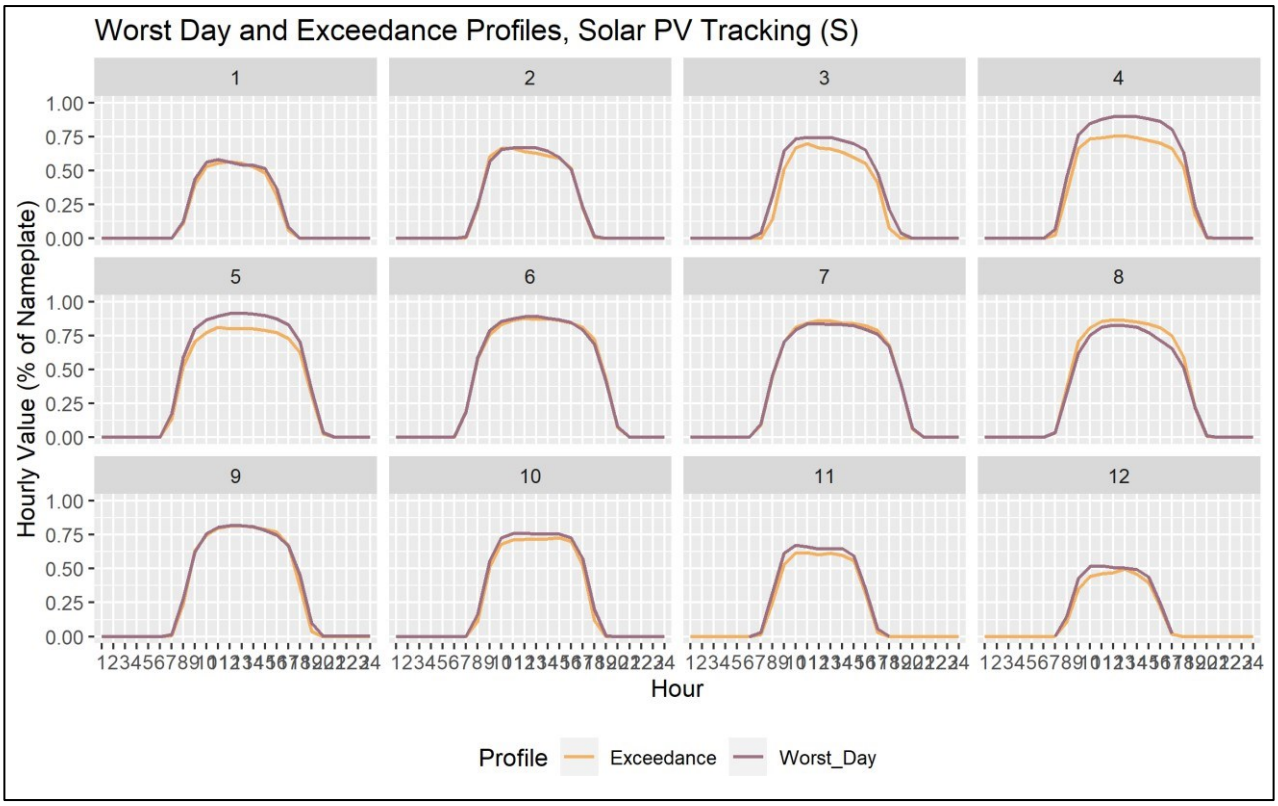


Figure 3: Comparative Profiles for Tracking Solar Photovoltaics, Southern California

The impacts of lost capacity, particularly for wind resources, may be significant for the system and/or individual LSEs needing energy to charge battery storage resources. While wind resources may produce significant energy on any given day, the variability, which drives low exceedance results, is unlikely to reflect the available energy to the system. This methodology stands in stark contrast to capacity valuation for gas resources, which remain accredited at their full installed capacity rating, excluding both forced outages and thermal derates.

To date, NRDC is not aware of any benefits from the exceedance translation step, and encourages the Commission to consider direct application of the benchmark values in 2024 while contemplating longer-term resource counting improvements. As an alternative, consistent within the existing Decision language, Energy Division could establish monthly exceedance values which may mitigate some of the error introduced in the exceedance translation step.

3. Long-Term Durability

NRDC appreciates the urgency and limitations faced in developing the range of inputs and assumptions for initial implementation in 2024. In the long term, one of the core value propositions of Slice of Day is its durability to changing levels of resource penetration, as each resource's contributions are reflected explicitly on an hourly basis. However, without benchmarking the resource counting rules to this durability, it is unlikely to be achieved.

Moving forward, NRDC strongly encourages the Commission to prioritize the development of resource counting rules which are durable to the changing system, providing the Commission, Load-Serving Entities, resource owners, and others the confidence necessary to plan for the long-term decarbonization of the system.

Specifically, NRDC is concerned with several elements of the current benchmarking framework:

- **Data Source:** The source of data for the exceedance values, high load days for the prior six month-years, blends data from months which experienced low, moderate, and severe weather conditions without regard for whether the highest load days in any given month reflect the expected risk to be experienced within that month across a range of weather years. To address this, the modeling dataset within SERVM uses two decades of weather data to simulate both load and resource operations, identifying the operational conditions most likely to result in loss of load in any given months. The Commission should explore alternate methodologies which directly leverage the resource modeling performed by Energy Division to assess system reliability risk.
- **Data Availability:** Data availability is severely limited for several resources within the dataset. For out-of-state wind resources, neither region has a full set of data from 2017-2022; for solar thermal resource, limited operating plants introduce significant noise into the dataset. For these and other resources, the Commission should explore alternate methodologies which directly leverage the resource modeling performed by Energy Division to assess system reliability risk.
- **Data Selection:** While high load days likely represent a reasonable proxy for reliability risk, moving forward, a range of risks may materialize on the system as evolving demand profiles and resource availability may shift risk into unexpected hours, days, or seasons. Because it is difficult, and arguably arbitrary, to define a specific parameter for data selection, weighting resource profiles based on risk may solve the need to precisely determine a specific subset, as high-risk profiles would dominate the resulting profile

shapes. To identify these risks and align them with resource counting rules, the Commission should explore alternate methodologies which directly subset and weight resource profiles based on reliability risk, which may be observed as modeled Loss of Load or as tight system margins, as evaluated in probabilistic modeling (in SERVM) in the RA or IRP proceedings

- **Data Processing:** As discussed above, the processing of the Top 5 benchmark into exceedance values provides no discernible value and should be removed from the process.

Each of the above methodological choices is likely to result in some degree of error, which will necessarily inflate or deflate the Planning Reserve Margin as a counterweight. Returning to the example of tracking photovoltaics in Southern California, it appears likely that both the Top 5 benchmark and exceedance methodology overweight resource performance in the afternoon, as the highest load observations within the dataset show performance degradation in the afternoon.

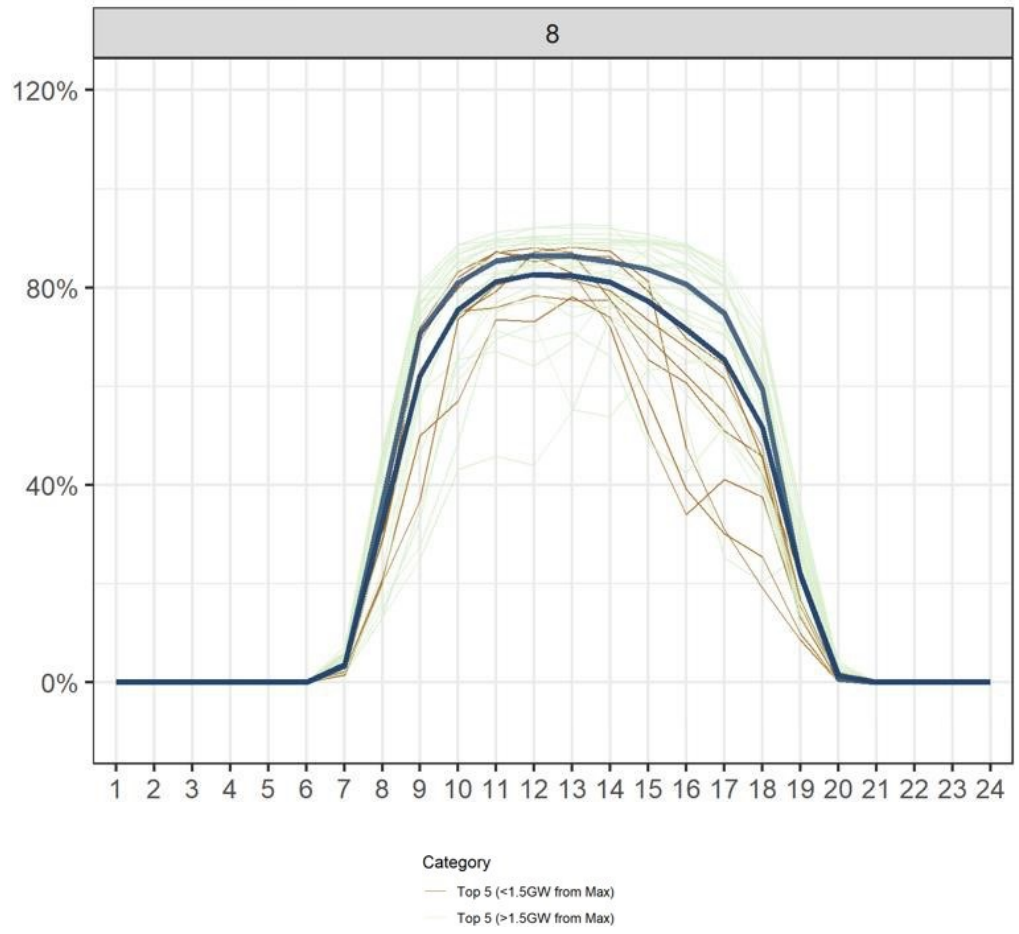


Figure 4: Daily Solar Profiles (August, 2017-2022), with

Highest Observed Load Observations in Brown

In contrast, Southern California wind in July illustrates a competing trend – while the average of the Top 5 days appears relatively low in morning and evening hours, the highest load days within the dataset are significantly higher than either the Top 5 or exceedance profiles.

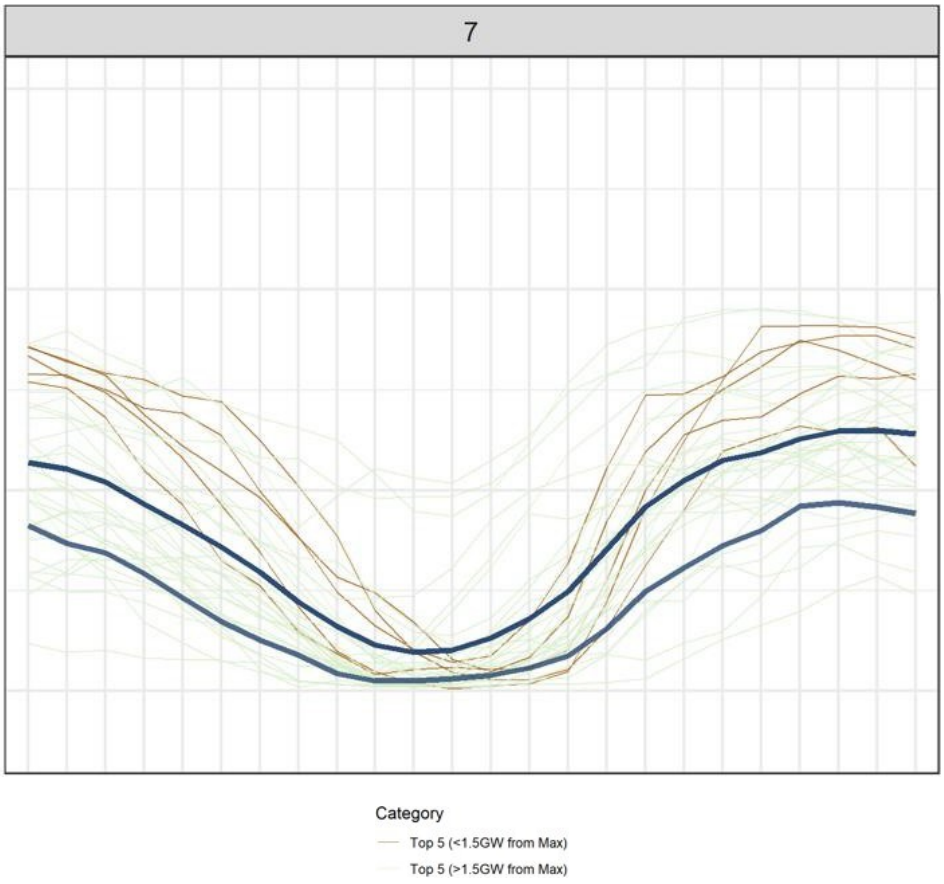


Figure 5: Daily Wind Profiles (July, 2017-2022), with Highest Observed Load Observations in Brown

NRDC strongly supports a calibration process by which Energy Division ensures that resource counting rules minimize change to the Planning Reserve Margin as the portfolio changes, as modeled within SERVM.[3] NRDC looks forward to working with the Commission to develop a more robust, durable, future-forward resource counting framework in the next phase of the

[3] Workshop Report on Final Proposals from Reform Track Phase 2 Workstream 1-3 Submitted by PG&E, p. 34-37

proceeding.

II. Conclusion

The CPUC should adopt NRDC's recommendations.

Respectfully submitted,

Dated: August 10, 2023

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Slice of Day Implementation: Impacts from Exceedance Translation

July 31, 2023

NP ENERGY

Exceedance Translation: An Unnecessary Penalty for Renewables in Slice of Day

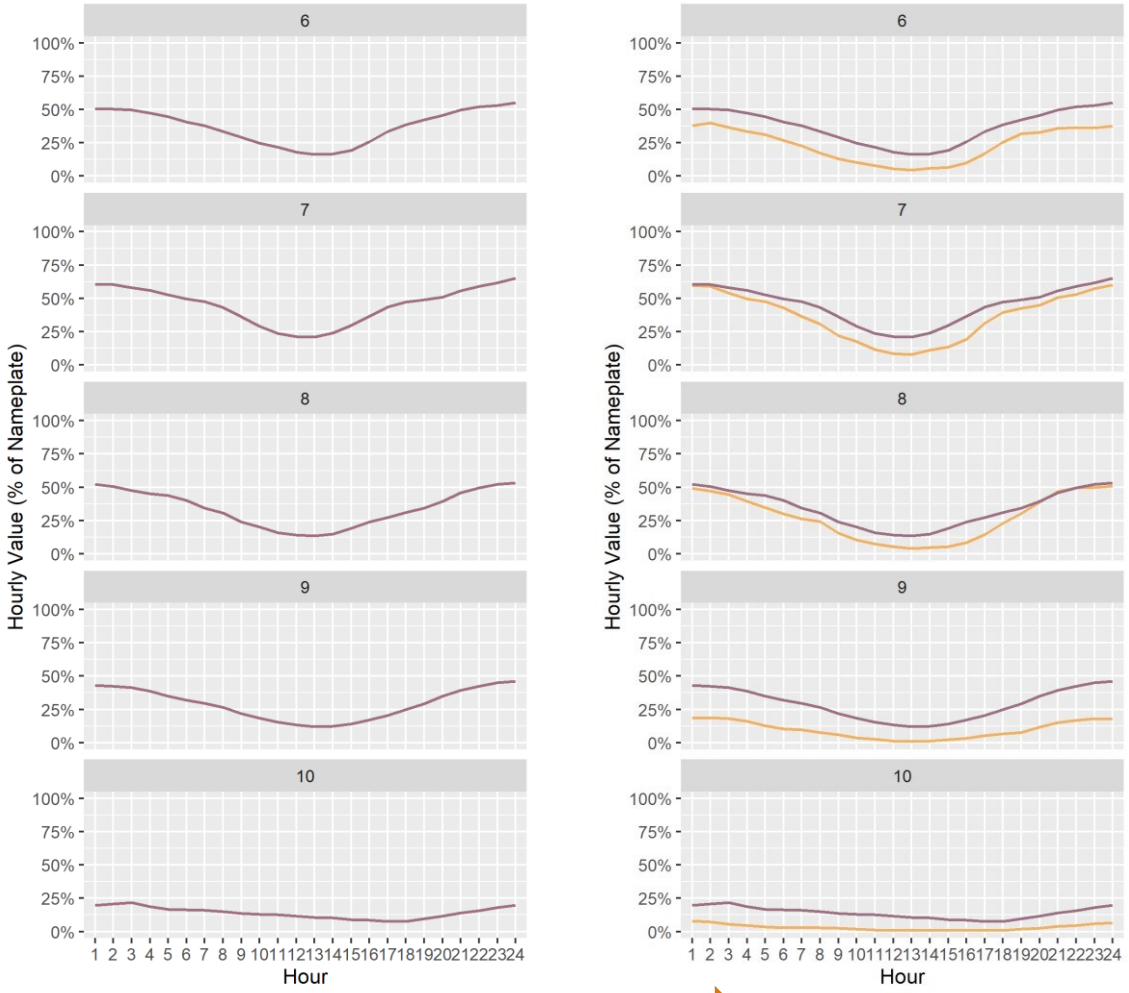
- Translating profiles from Top 5 to Exceedance:
  - *Adds no discernable value*
  - *Reduces accuracy and precision of expected resource availability*
  - *Establishes a structural disadvantage for clean resources, particularly wind*
  - *Stands in stark contrast to the overcounting bias for thermal resources through ICAP*

- **The Commission can easily remedy this by directly applying the Top 5 profiles for resource counting – no further data analysis or record development is required.**

Lost in Translation: Energy Omitted Between Top 5 and Exceedance

Context: Exceedance Translation Process

- D.23-04-010 adopted a process to develop robust *Top 5* profiles reflecting expected energy availability on high load / high-grid stress days
- However, aligning with a prior decision, the Commission directed Energy Division to fit Top 5 profiles to seasonal exceedance values for compliance purposes rather than apply them directly
- Exceedance profiles are selected seasonally (i.e. June-October) and are tuned to minimize overcrediting during August and September peaks
- This exceedance translation introduces significant and unnecessary error to the profiles with no discernible benefit to accuracy, precision, durability, etc

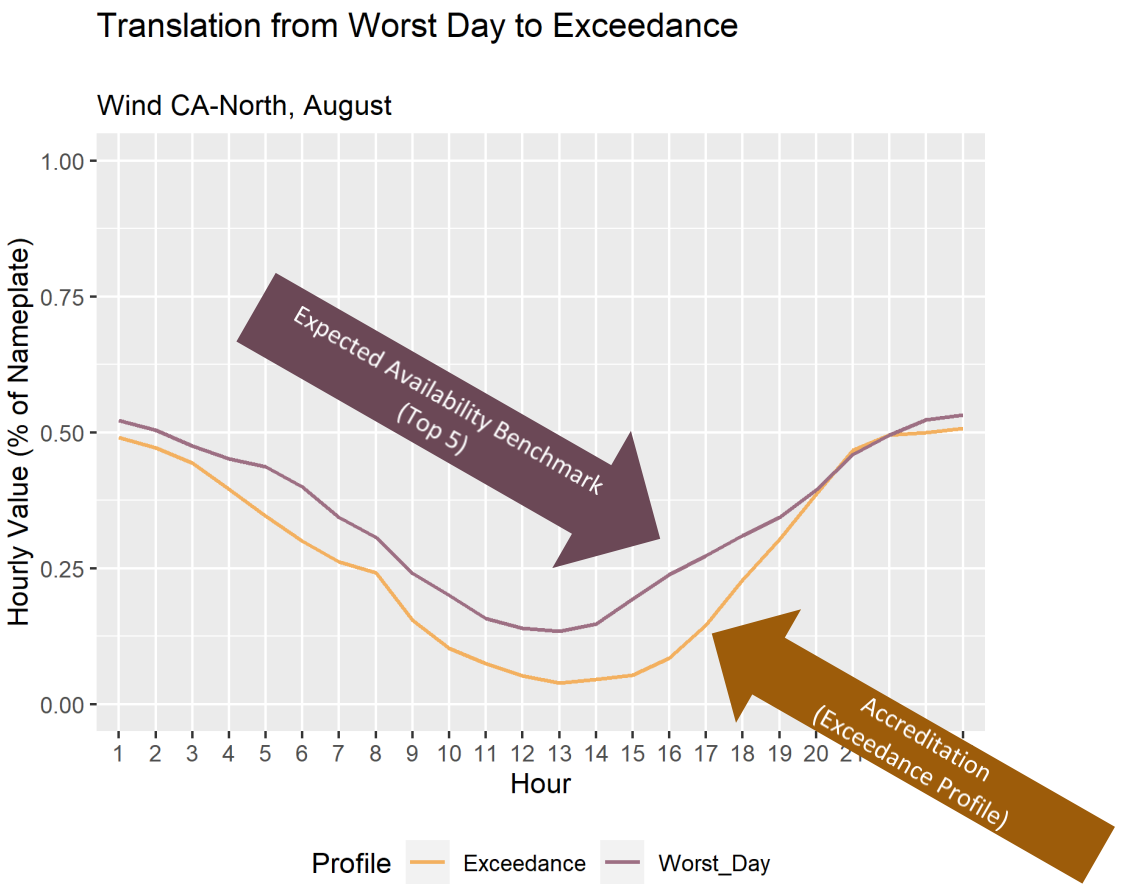


Exceedance: A Structural Disadvantage

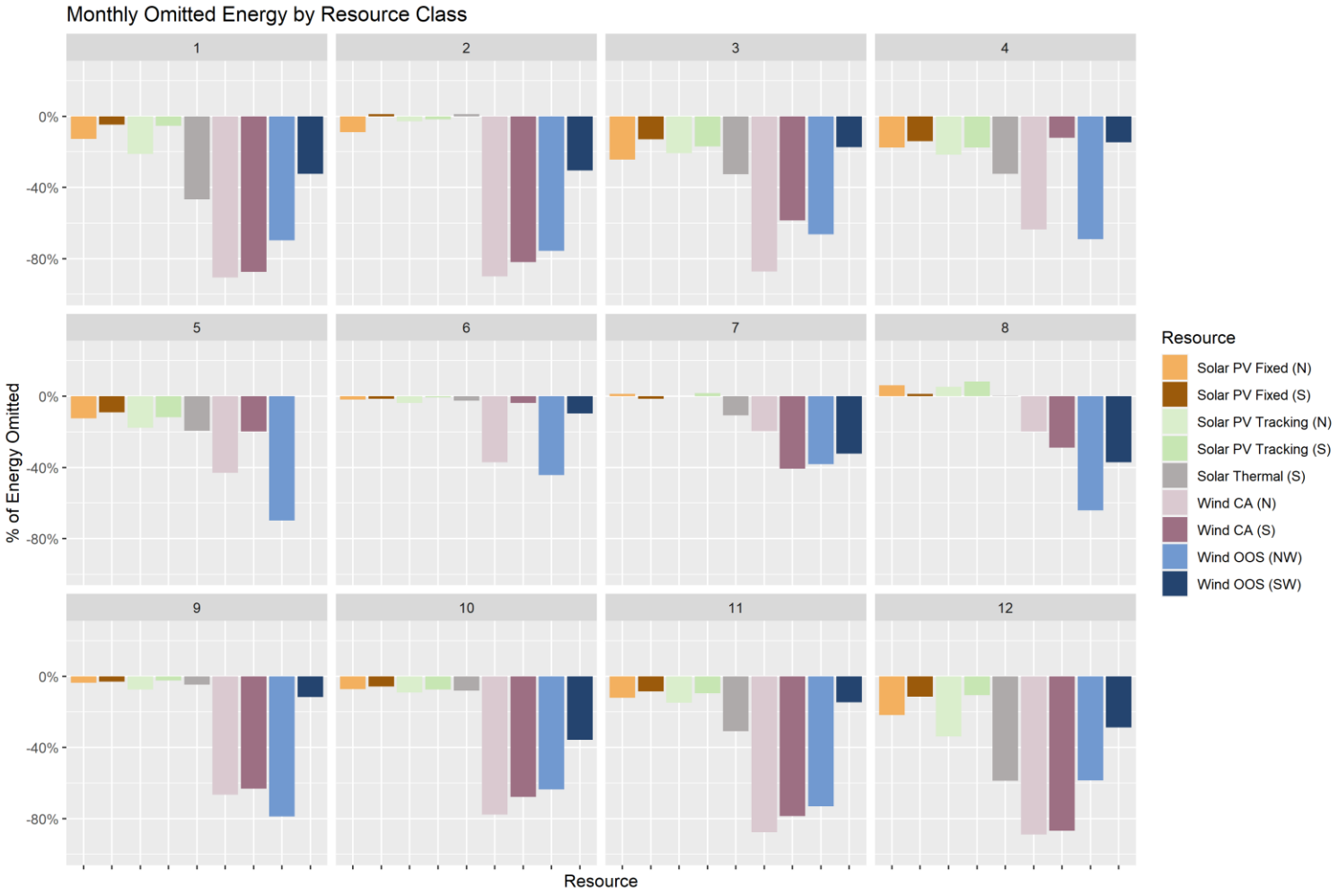
- As discussed in the Workshop Report (p.30-31), comments (p. 4), and workshop presentations (slides 7-9):

  "The final exceedance matching step … introduces significant and unnecessary error in all hours for which the selected exceedance methodology is not a good match"

- As one example, 29% of the energy determined to be available *under the rigorous Top 5 analysis* is needlessly eliminated in the exceedance translation for Northern CA wind

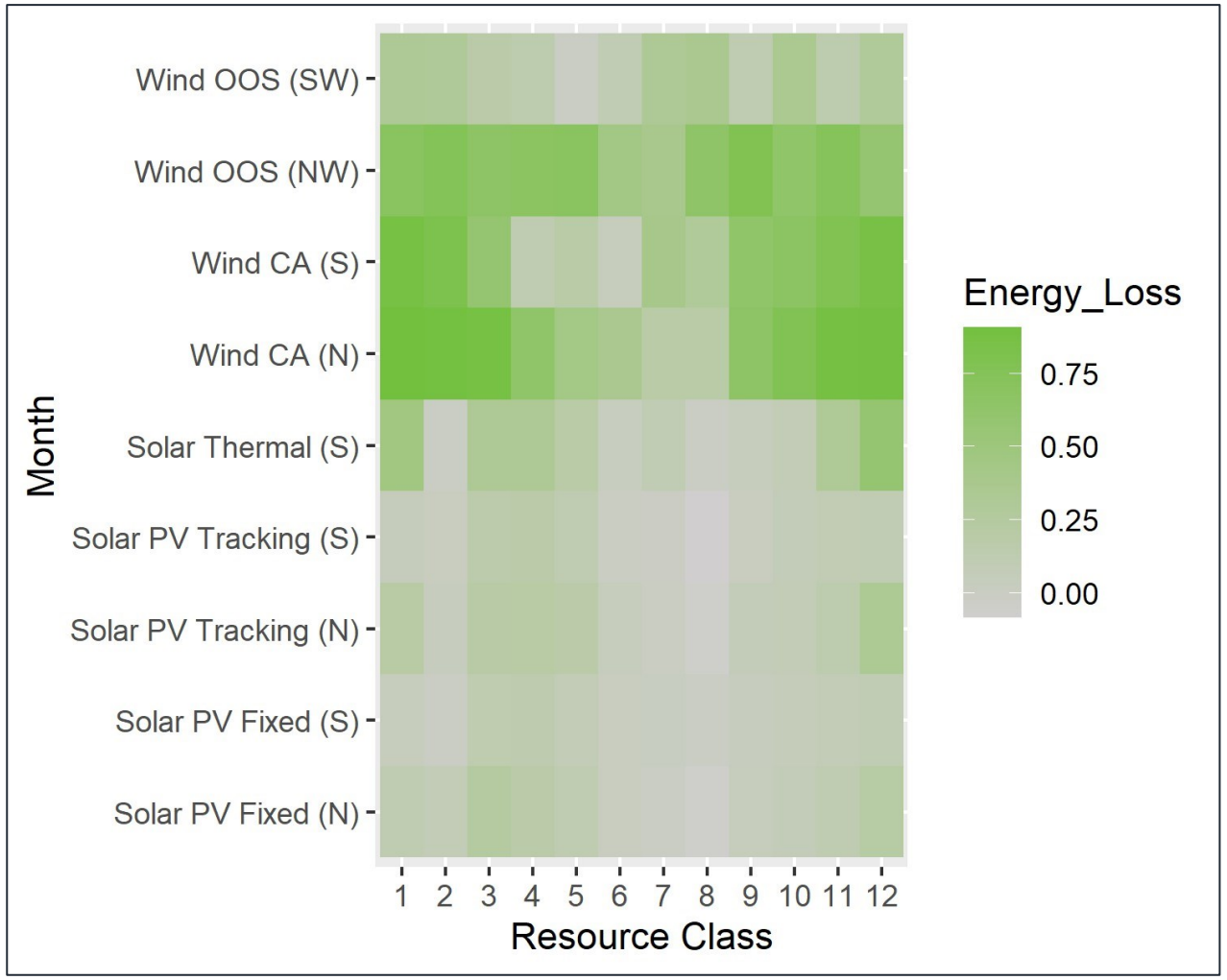


Energy Availability Lost to Exceedance Translation



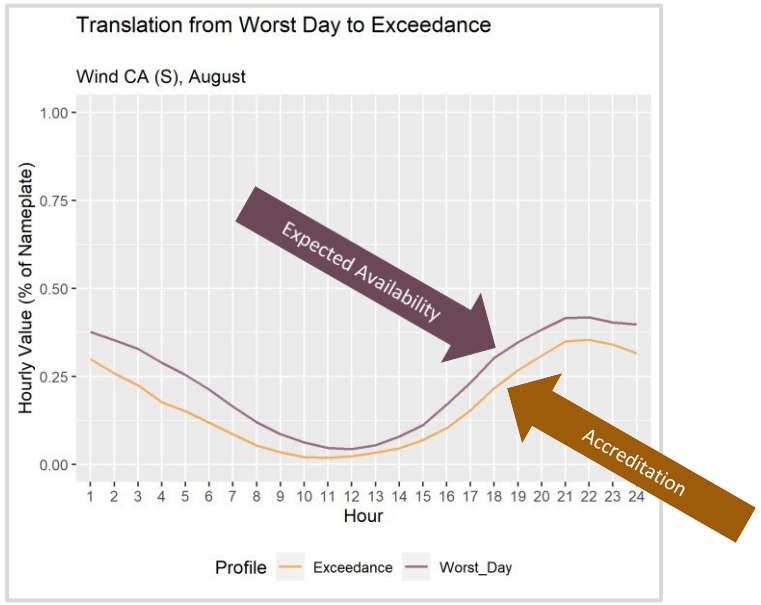
While profile accuracy is reduced for all resources, wind resources are particularly negatively impacted.

Energy Availability Lost to Exceedance Translation

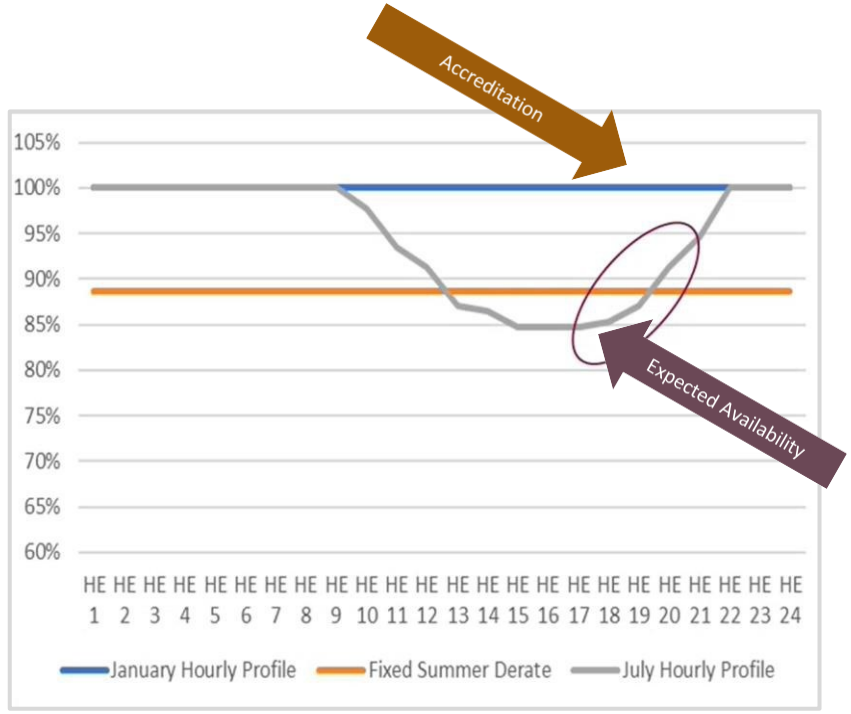


While profile accuracy is reduced for all resources, wind resources are particularly negatively impacted.

Structural Biases for Renewables and Thermals



Wind Resource Penalty



Thermal Resource Bonus (Desert Star Example)

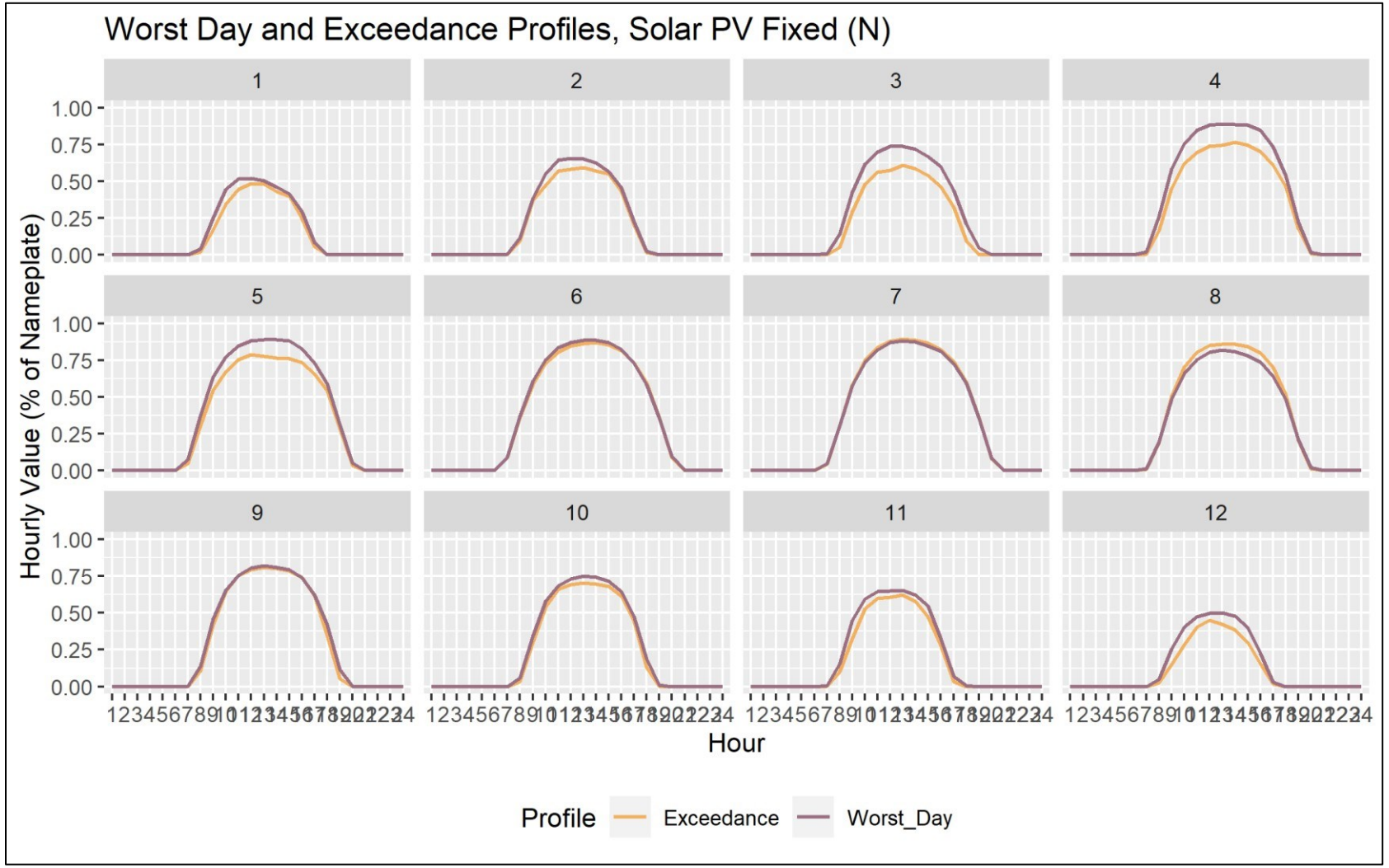
With the exceedance translation, renewable resources are structurally undercounted, while thermal resources continue to receive structural overcounting relative to expected availability as thermal derates and outages are excluded from counting rules (some resources may elect to withhold NQC for thermal derates, but this is not mandatory).

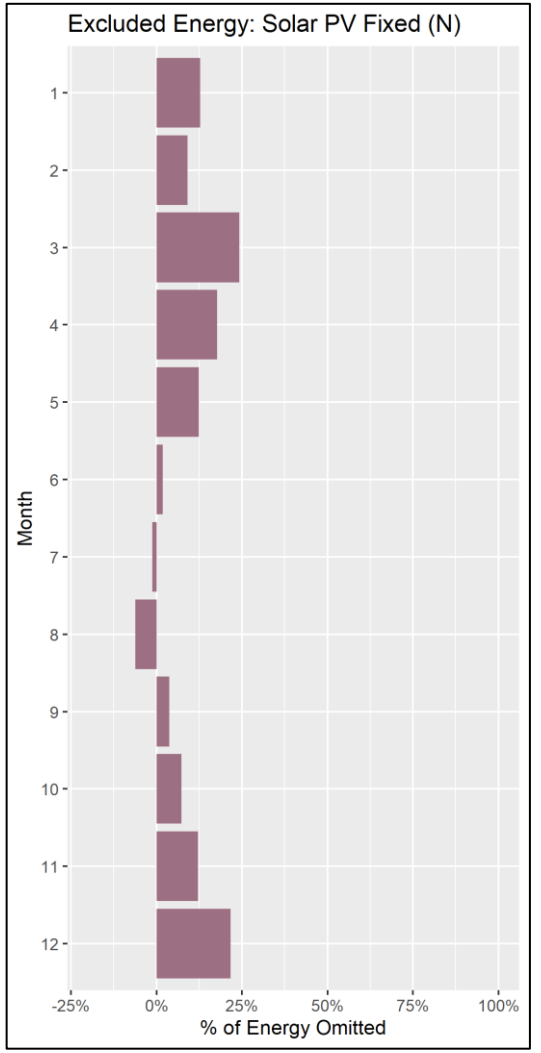
Alternatives to Exceedance

- Direct application of Top 5 profiles without exceedance translation
- Exceedance analysis performed on Top 5 subset
- Synthetic profiles developed through statistical analysis of SERVM profiles on days with modeled loss of load

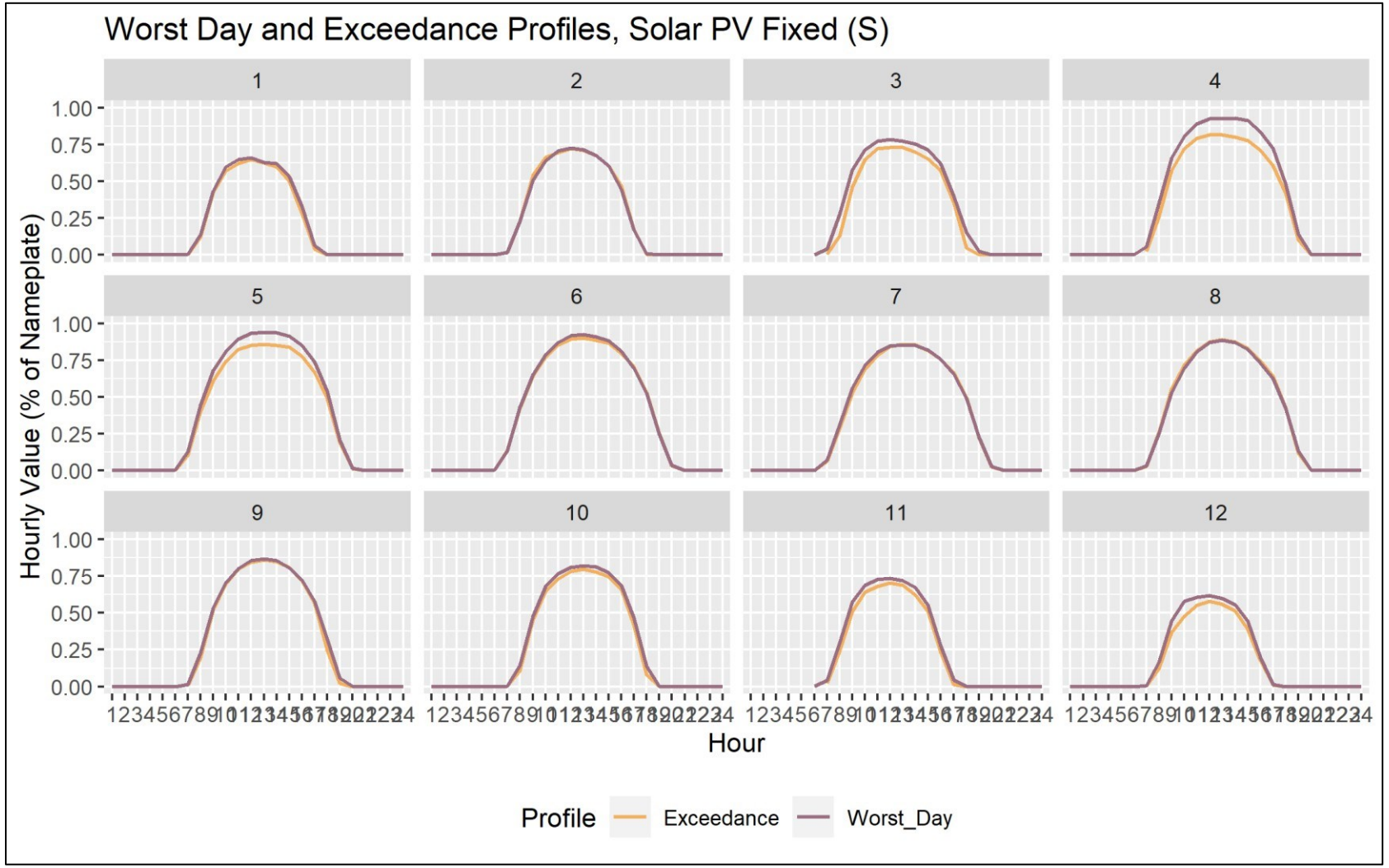
Appendix I: Resource Class Results

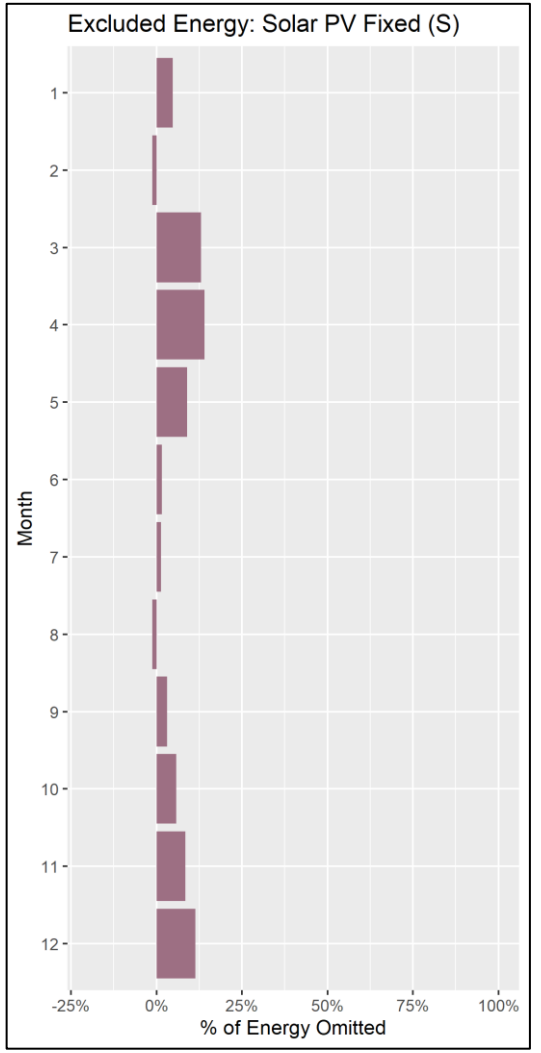
Solar (Fixed) – Northern California



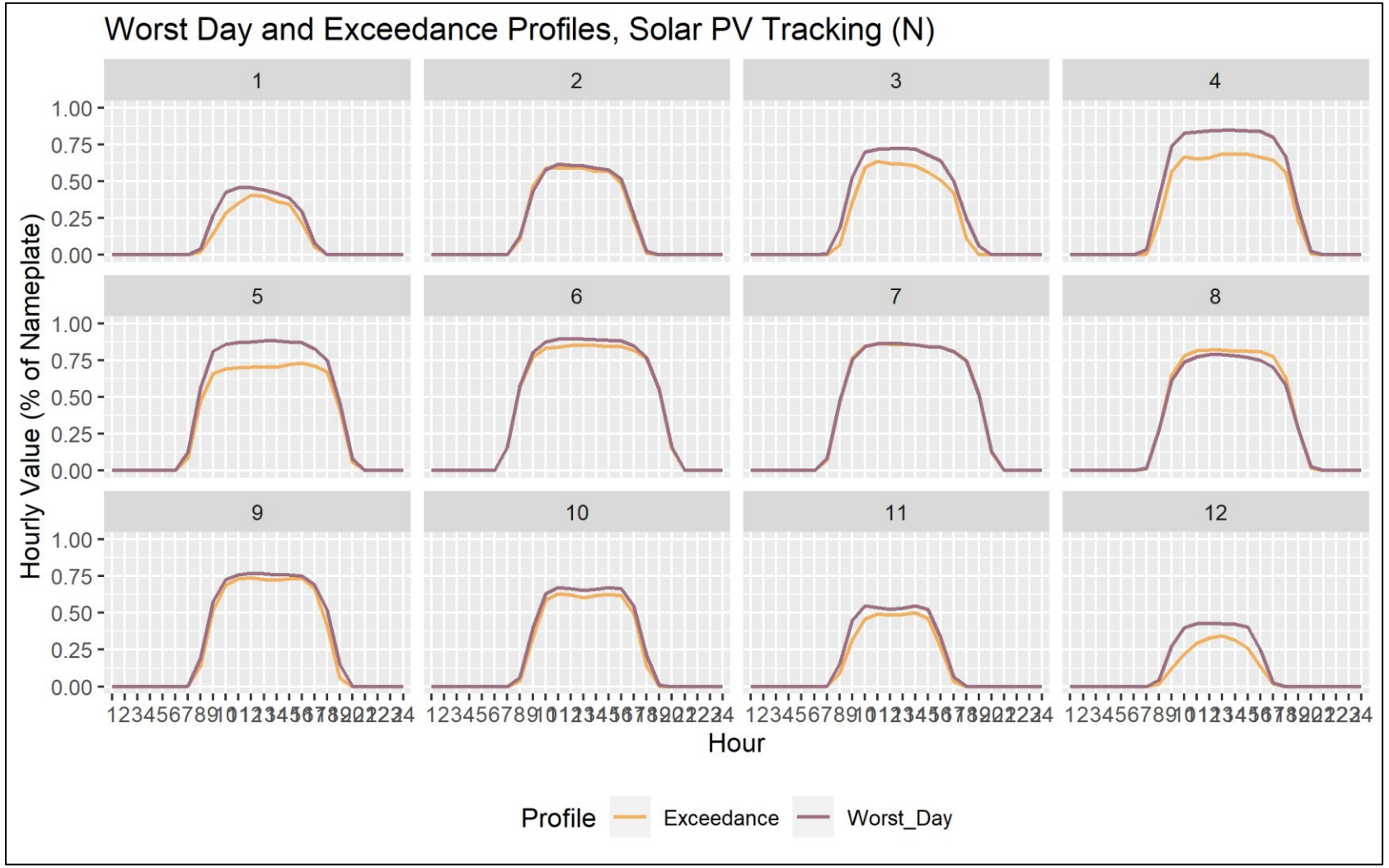


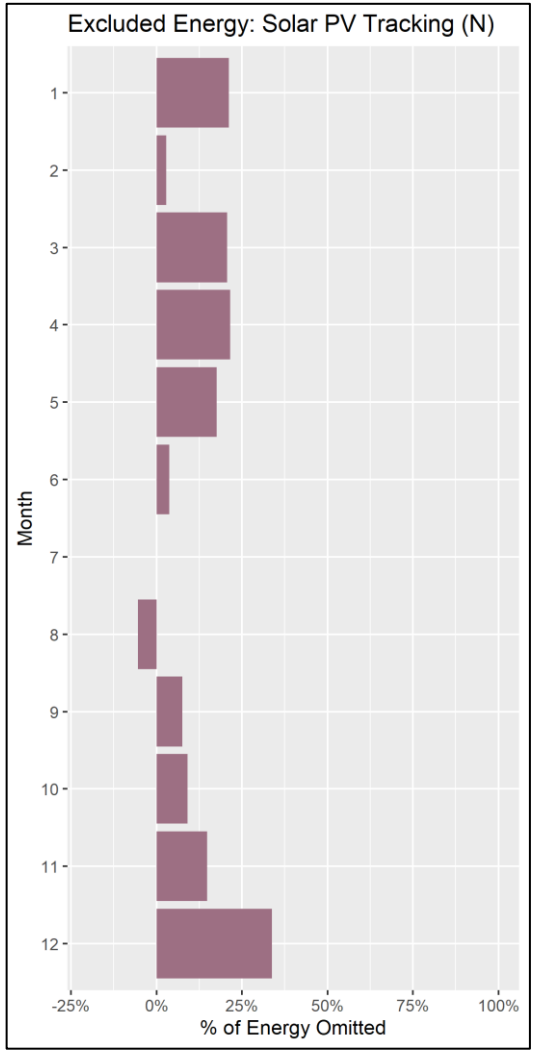
Solar (Fixed) – Southern California



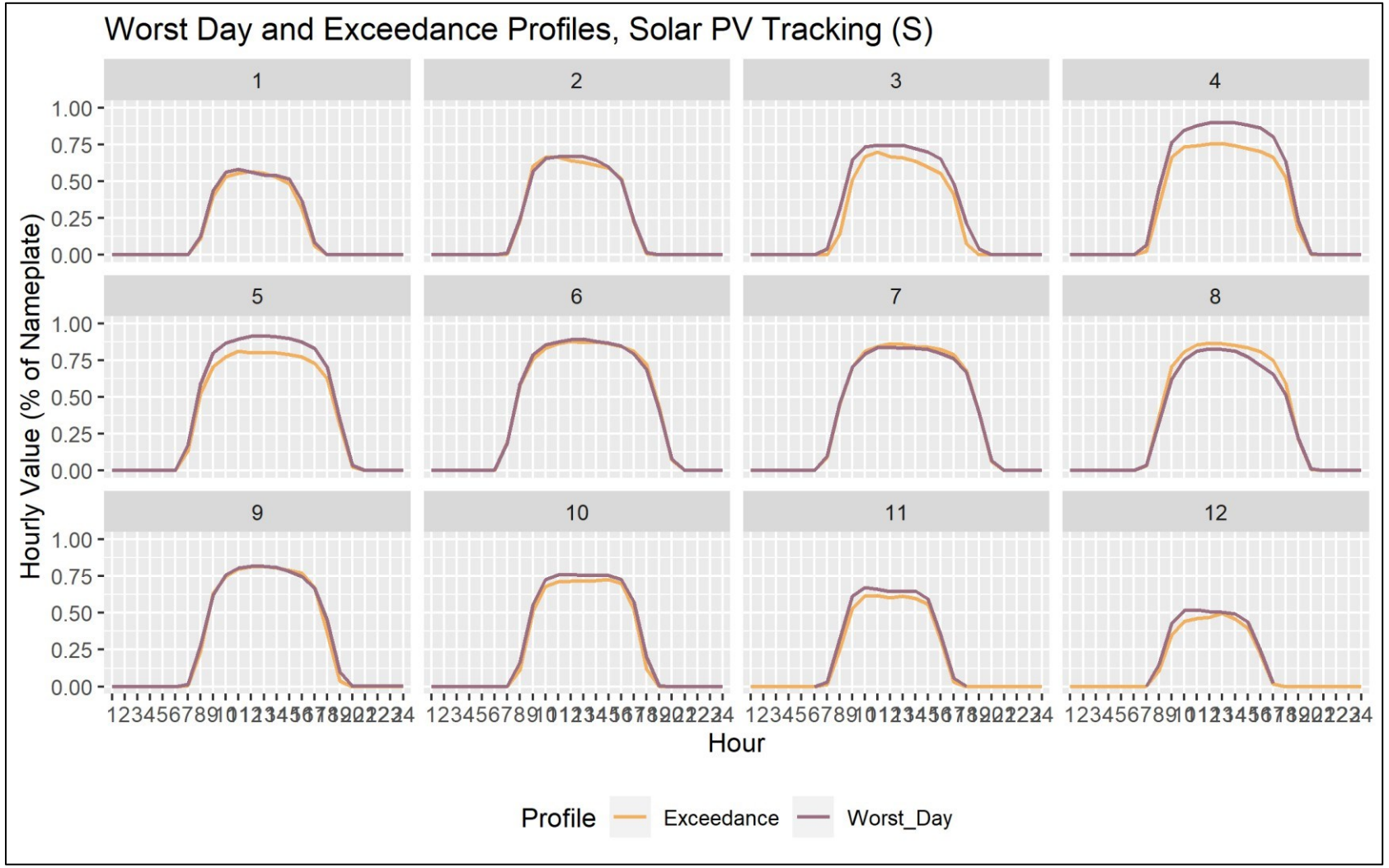


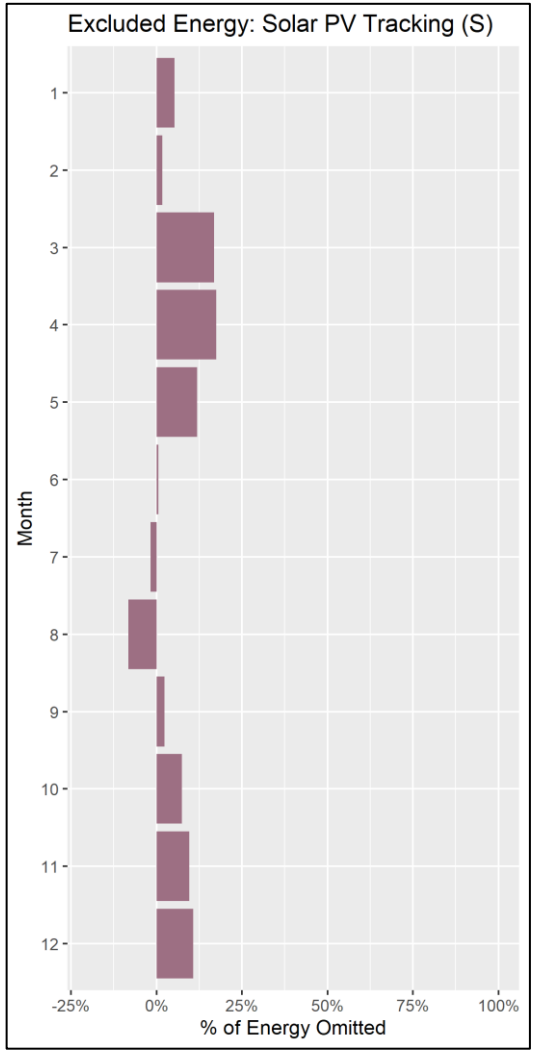
Solar (Tracking) – Northern California



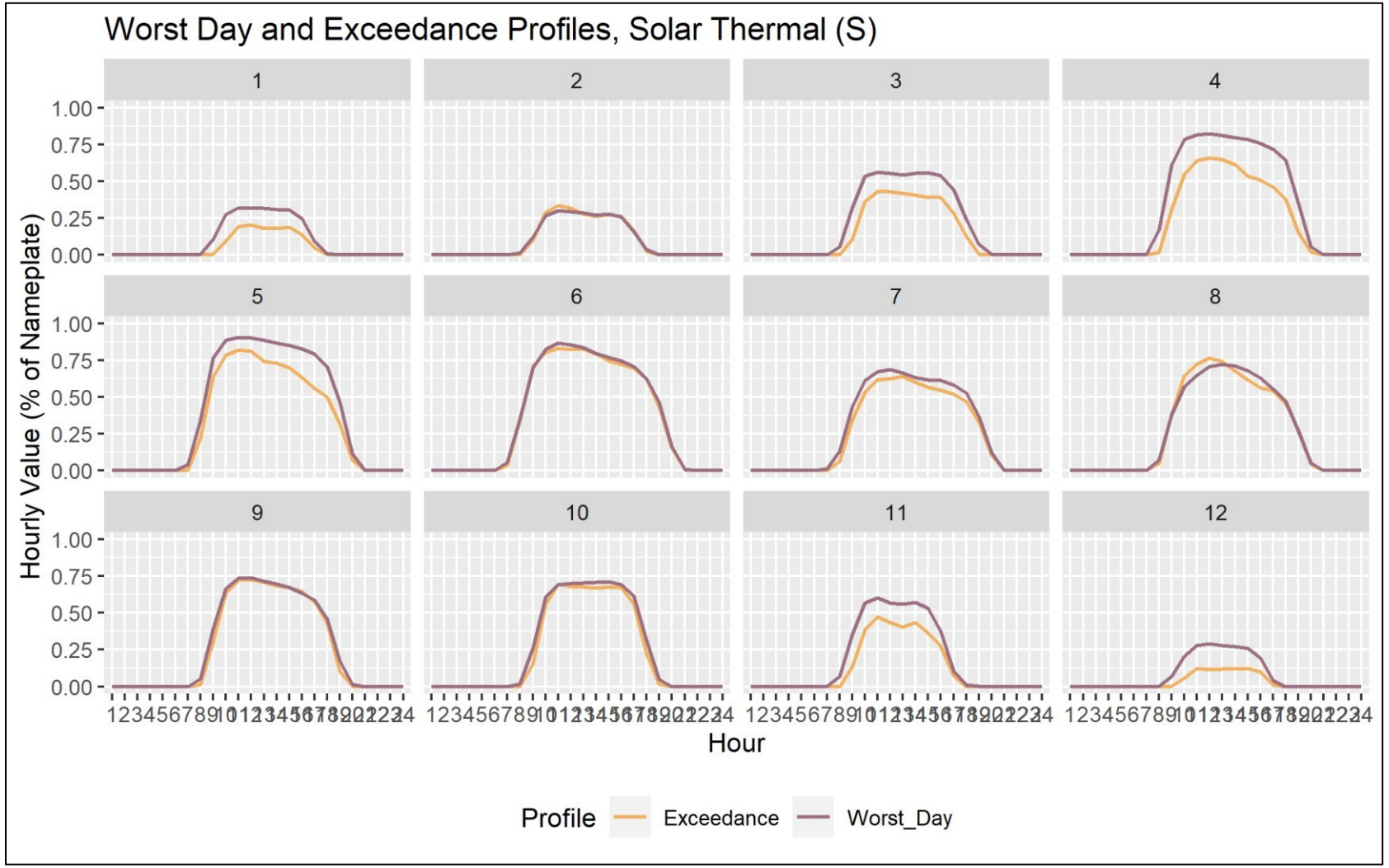


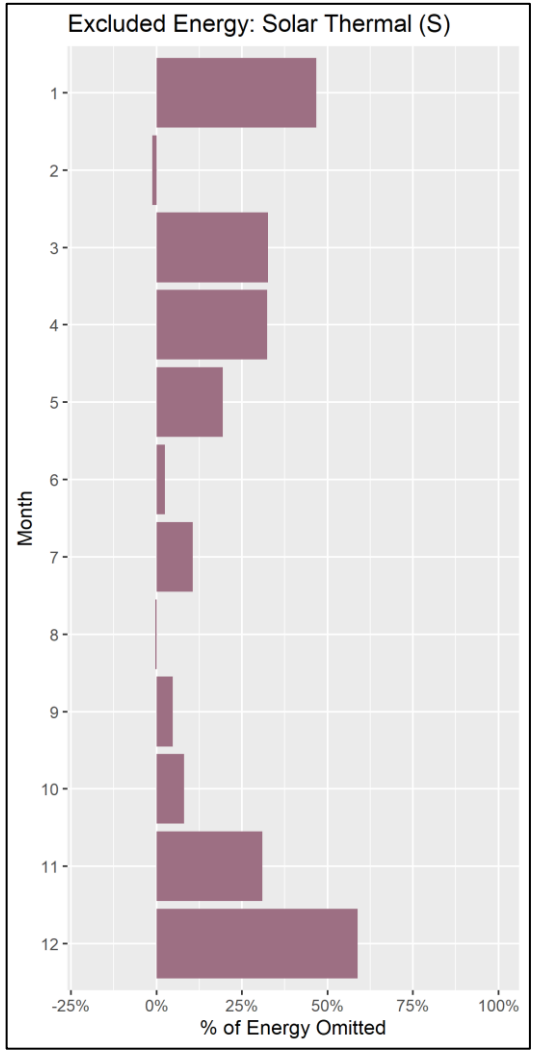
Solar (Tracking) – Southern California



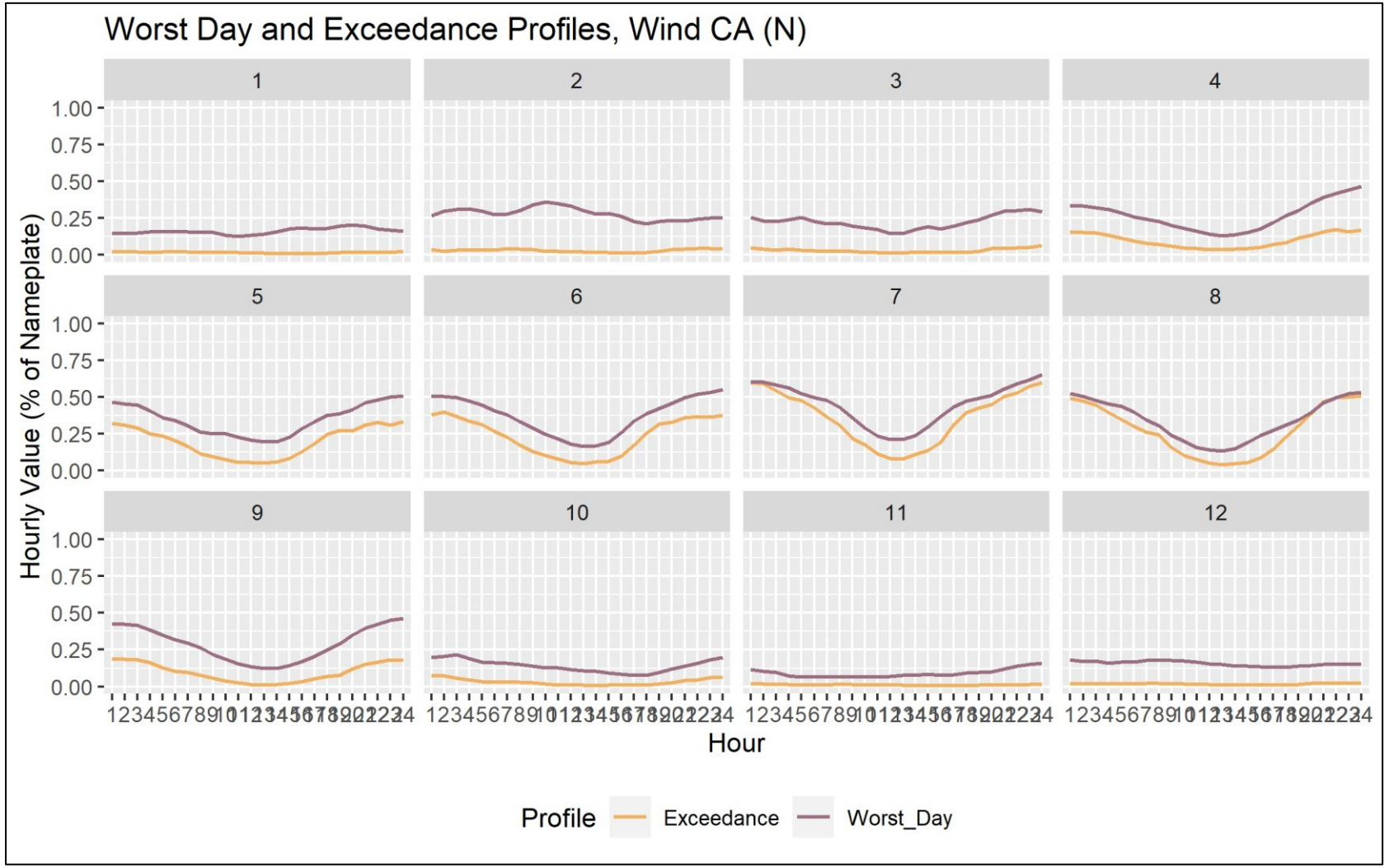


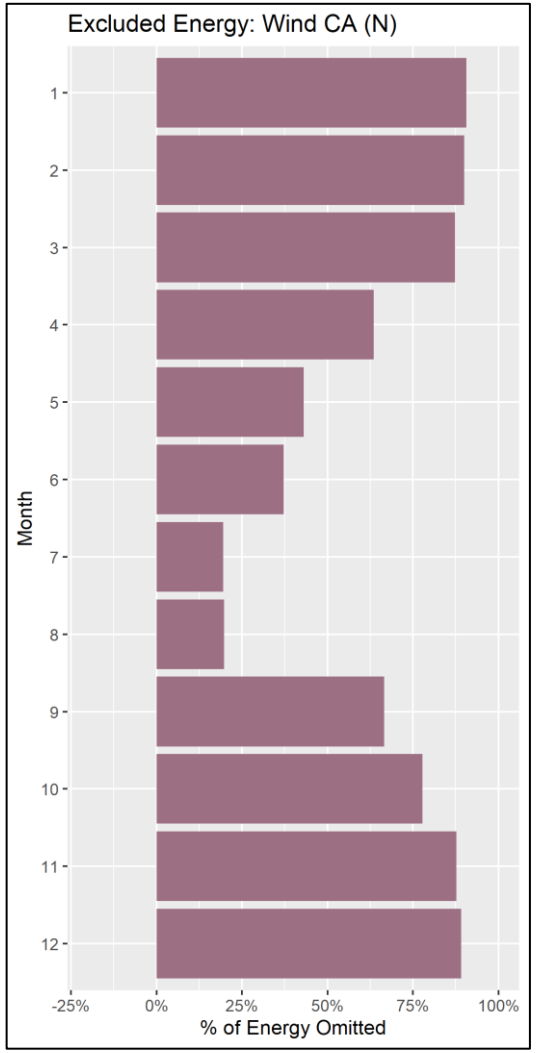
Solar Thermal – Southern California



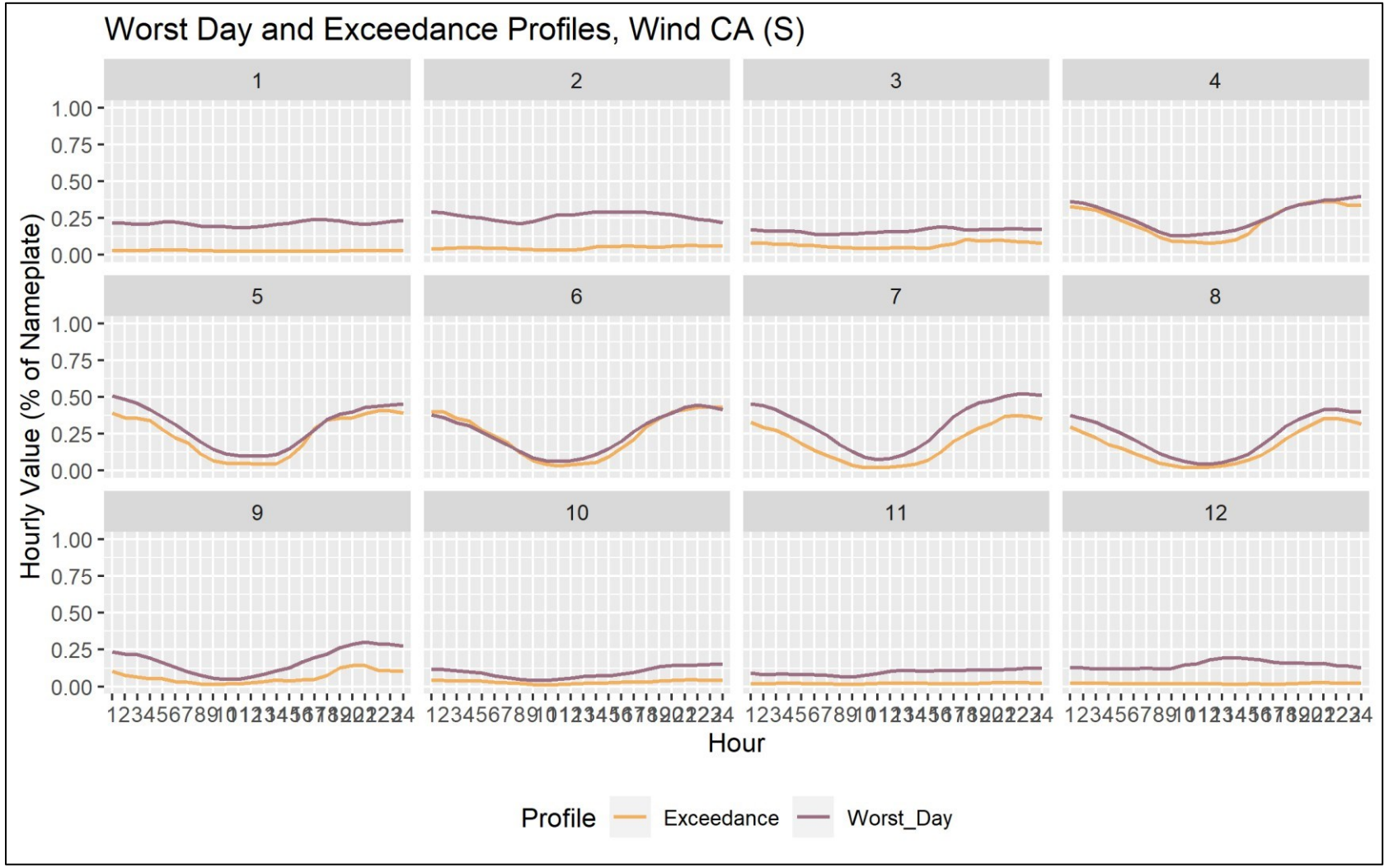


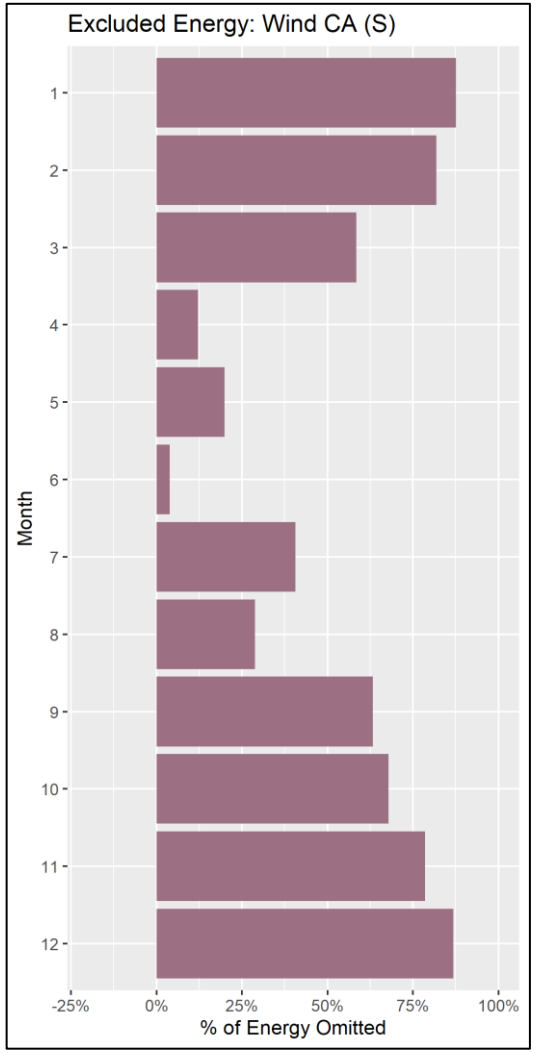
Wind – Northern California



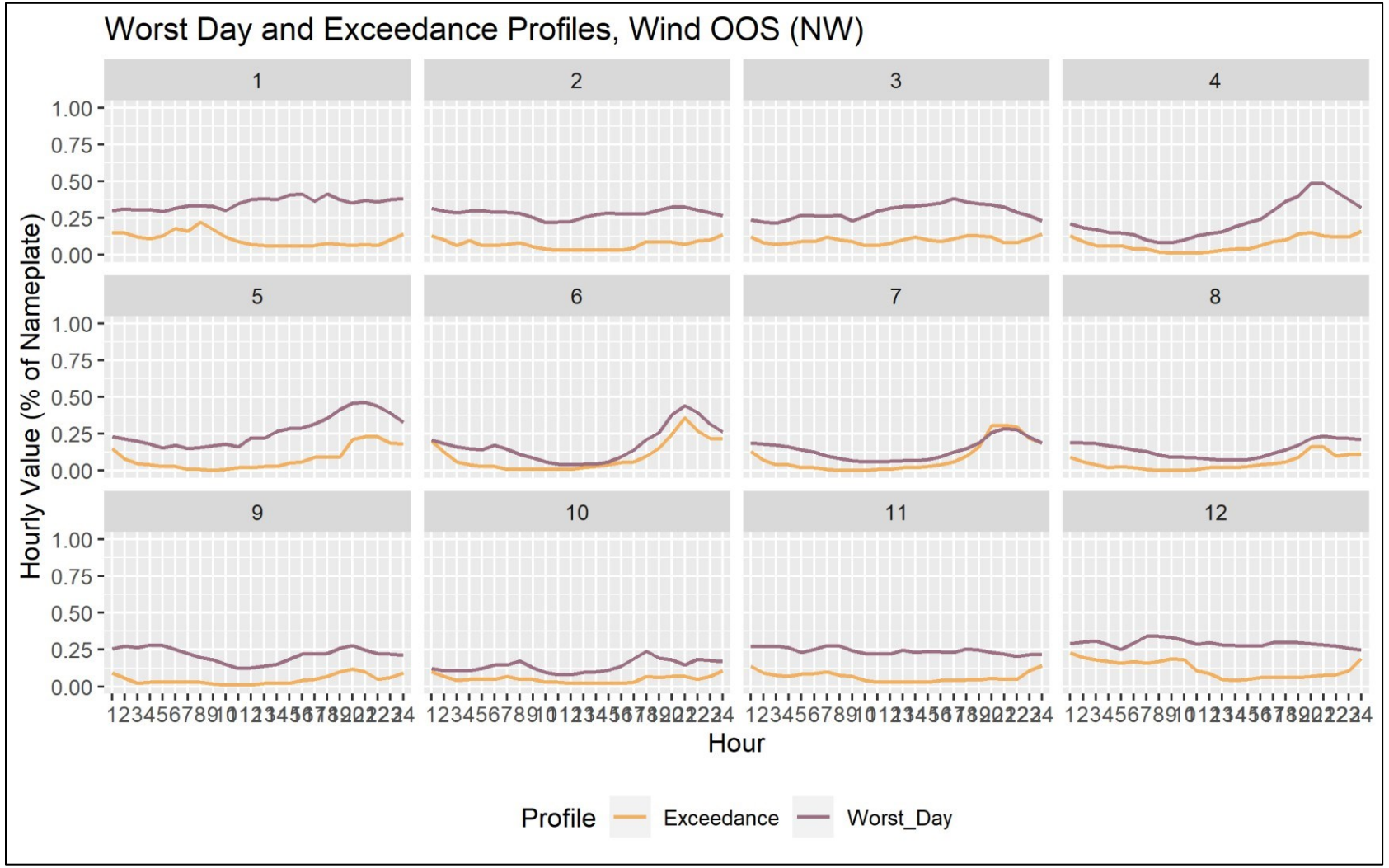


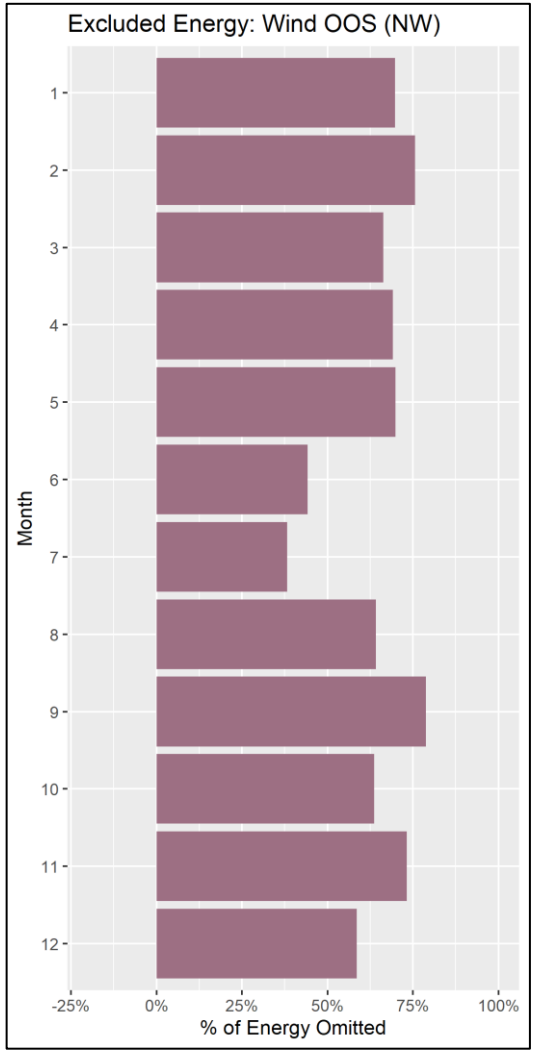
Wind – Southern California



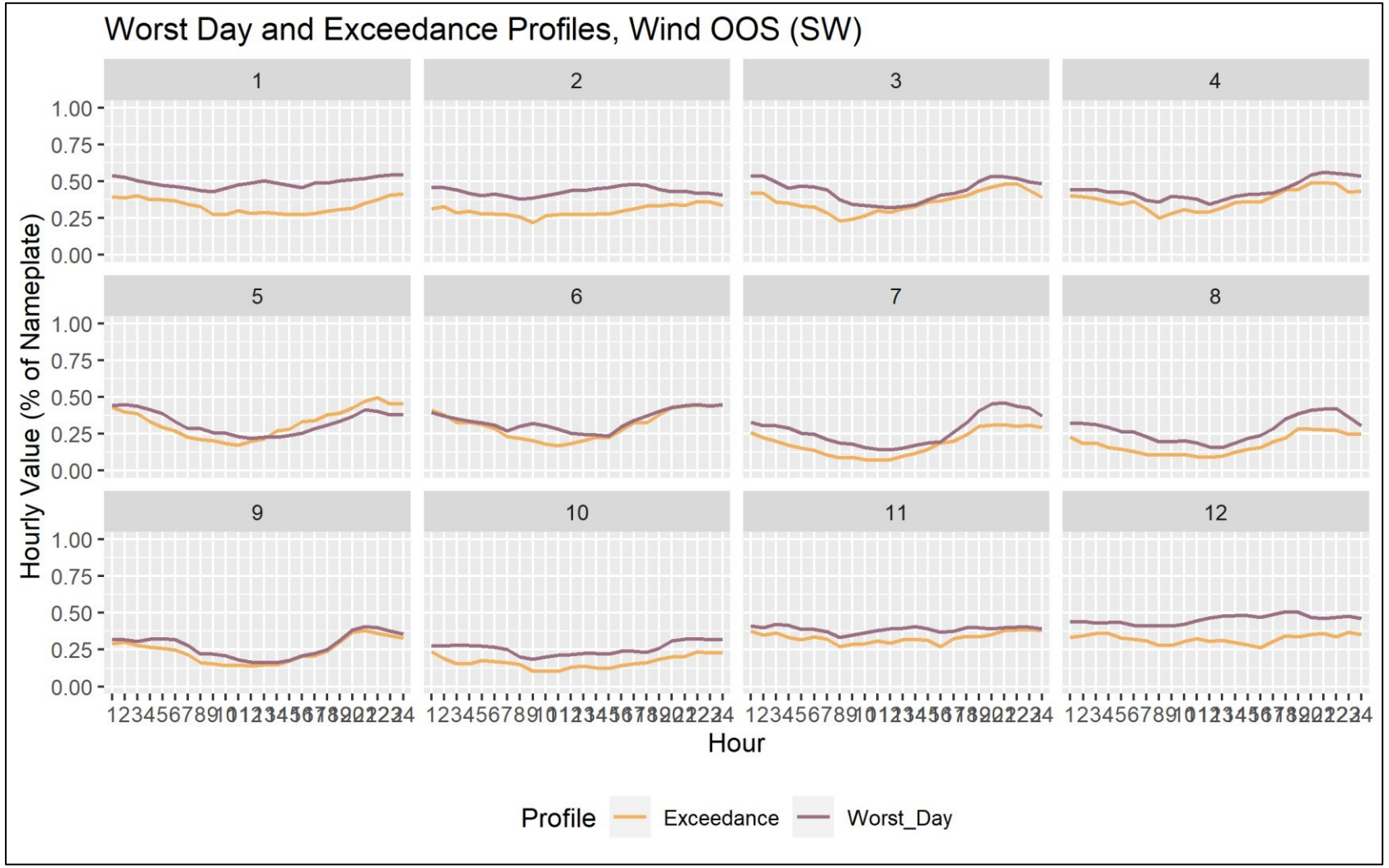


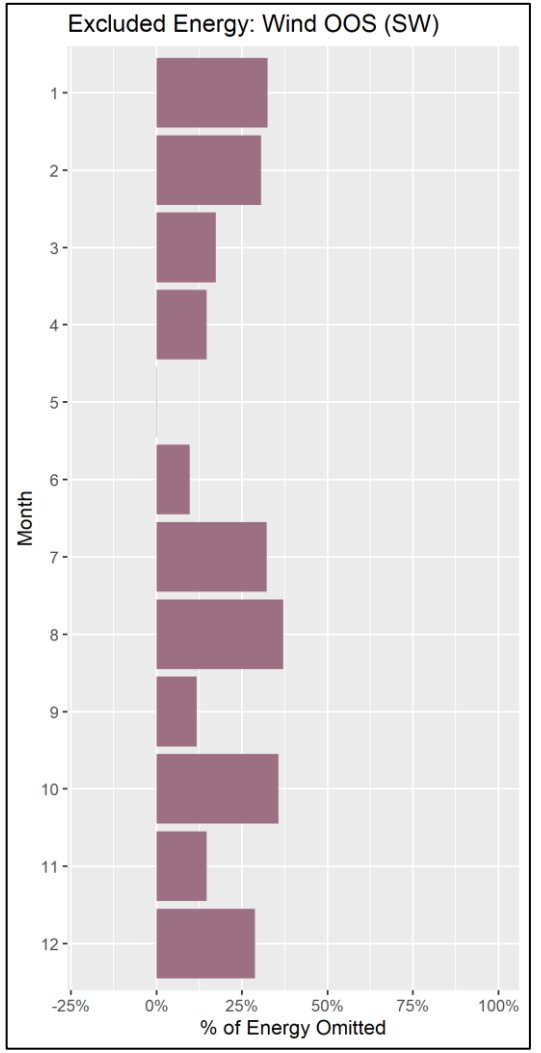
Wind – OOS (Oregon, Washington)





Wind – OOS (Arizona, New Mexico)





Appendix II: Daily Observations

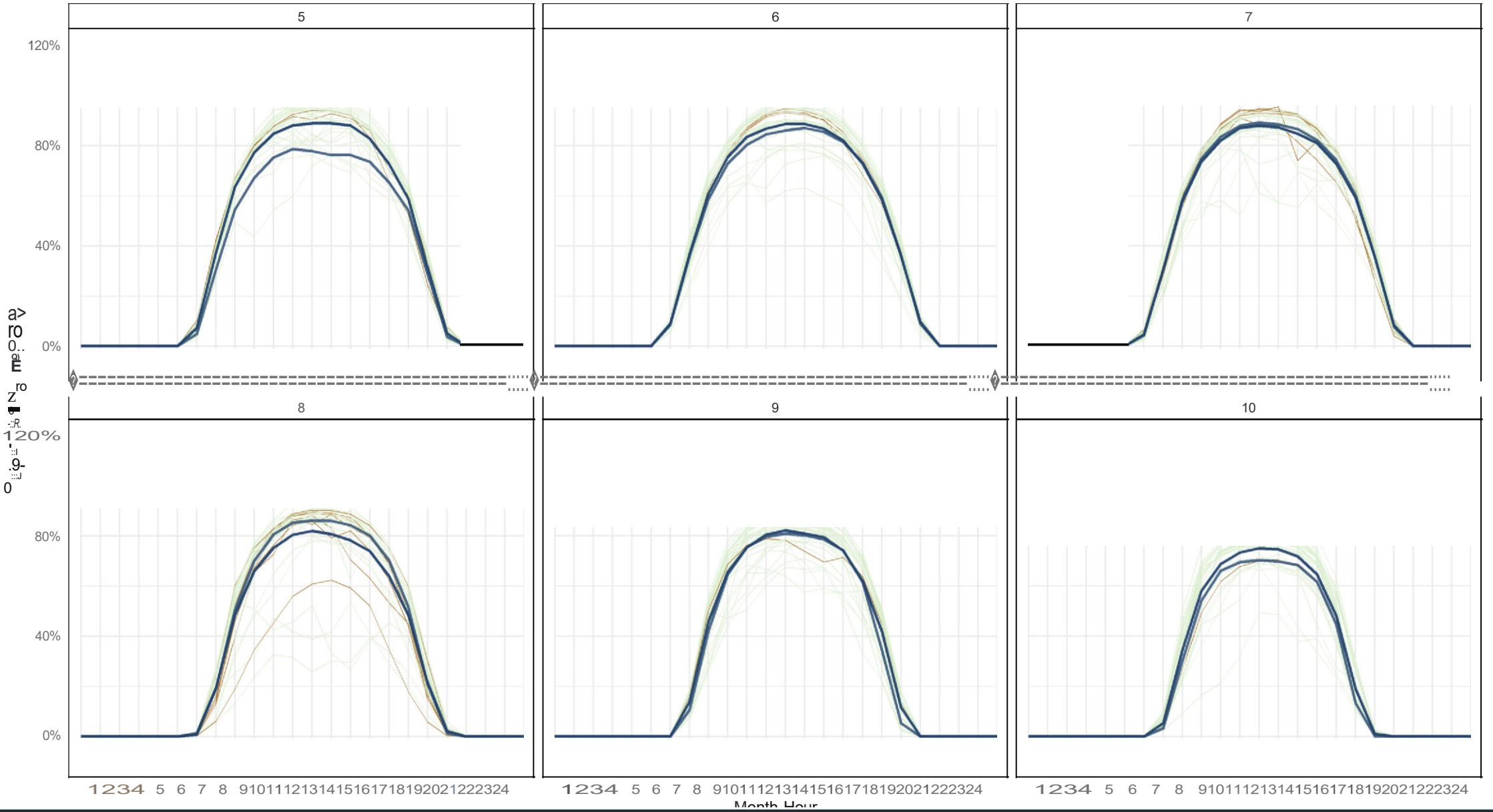
What's Inside the Top 5 Data?

- Does the average of the subset of the Top 5 days (plus CAISO events) adequately reflect expected resource availability?

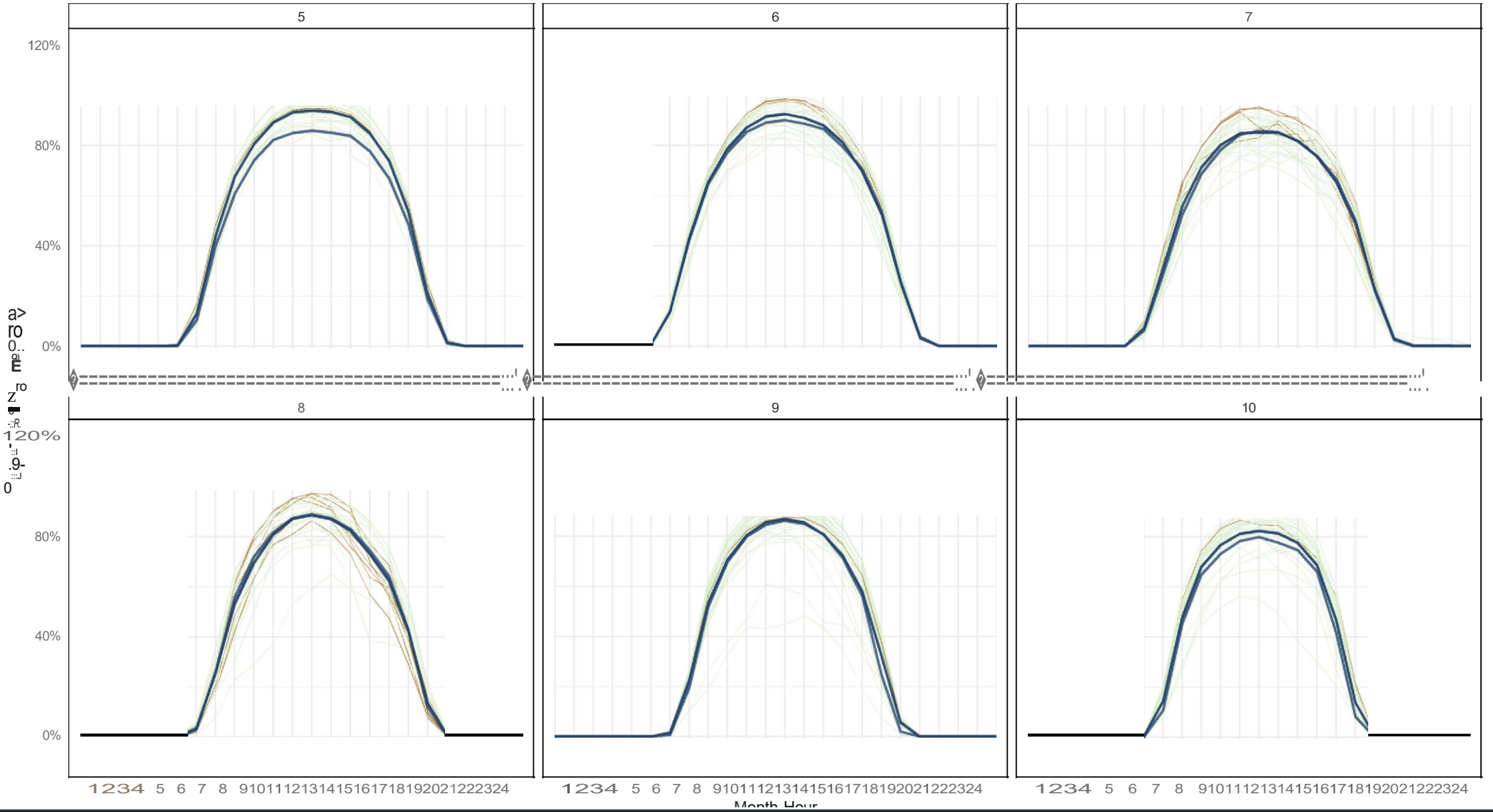
- What does the available data indicate regarding resource performance during high load days?

- The following slides highlight observed daily performance during summer months, showing both the Top 5+ subset as well as any day with a peak load within 5% of the max monthly load across the dataset.

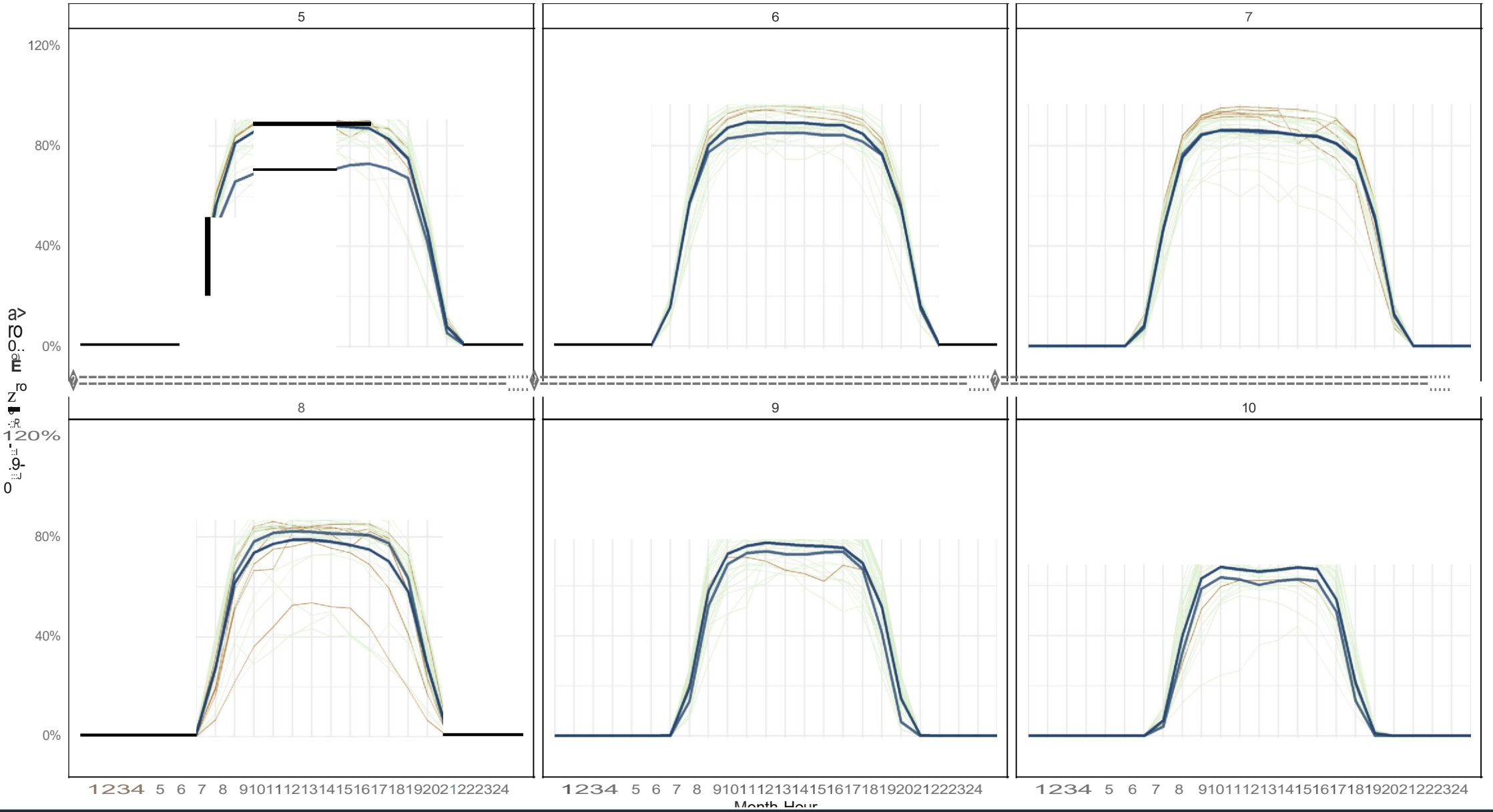
Benchmarking: Solar PV Fixed (N)



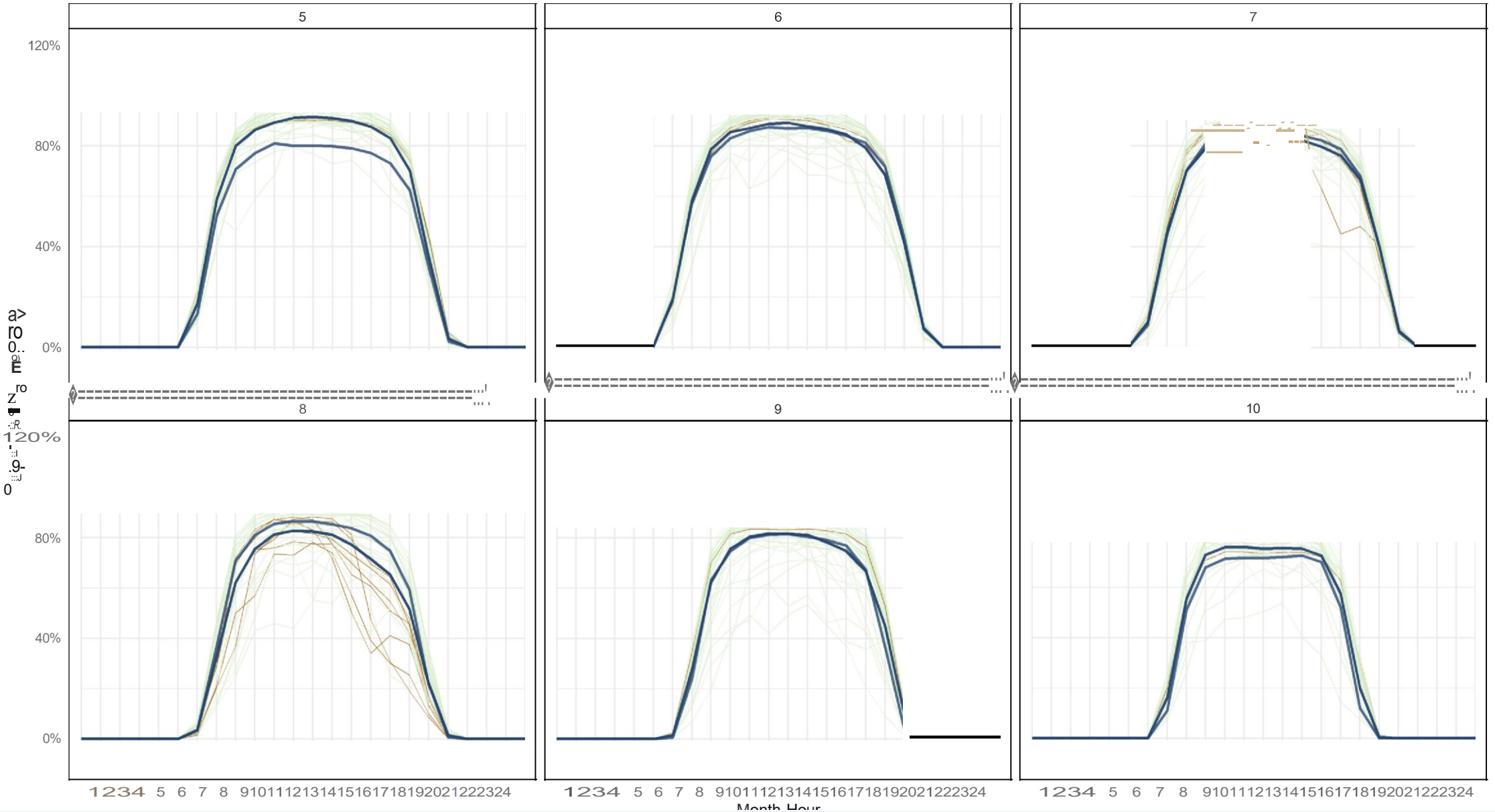
Benchmarking: Solar PV Fixed (S)



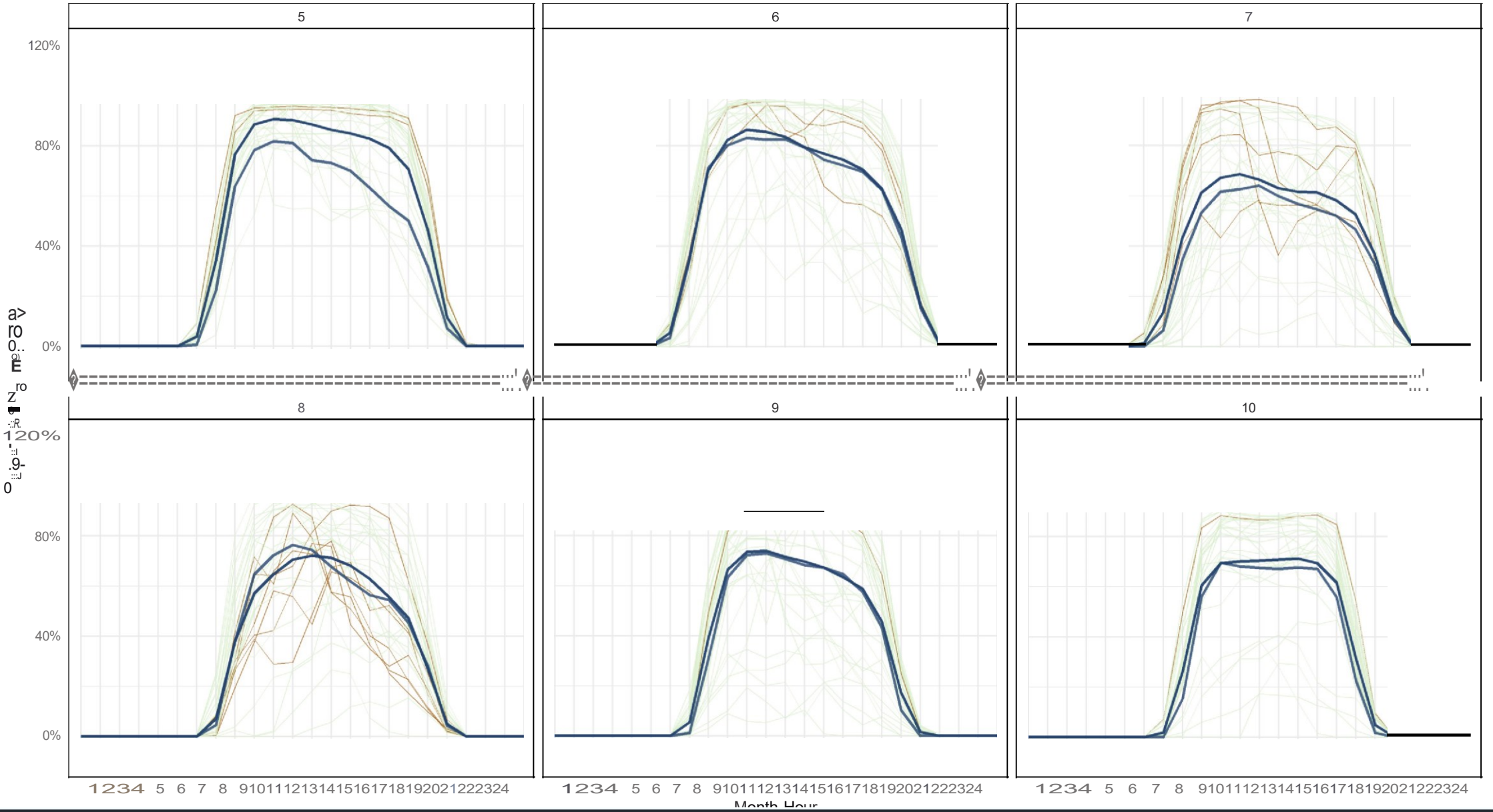
Benchmarking: Solar PV Tracking (N)



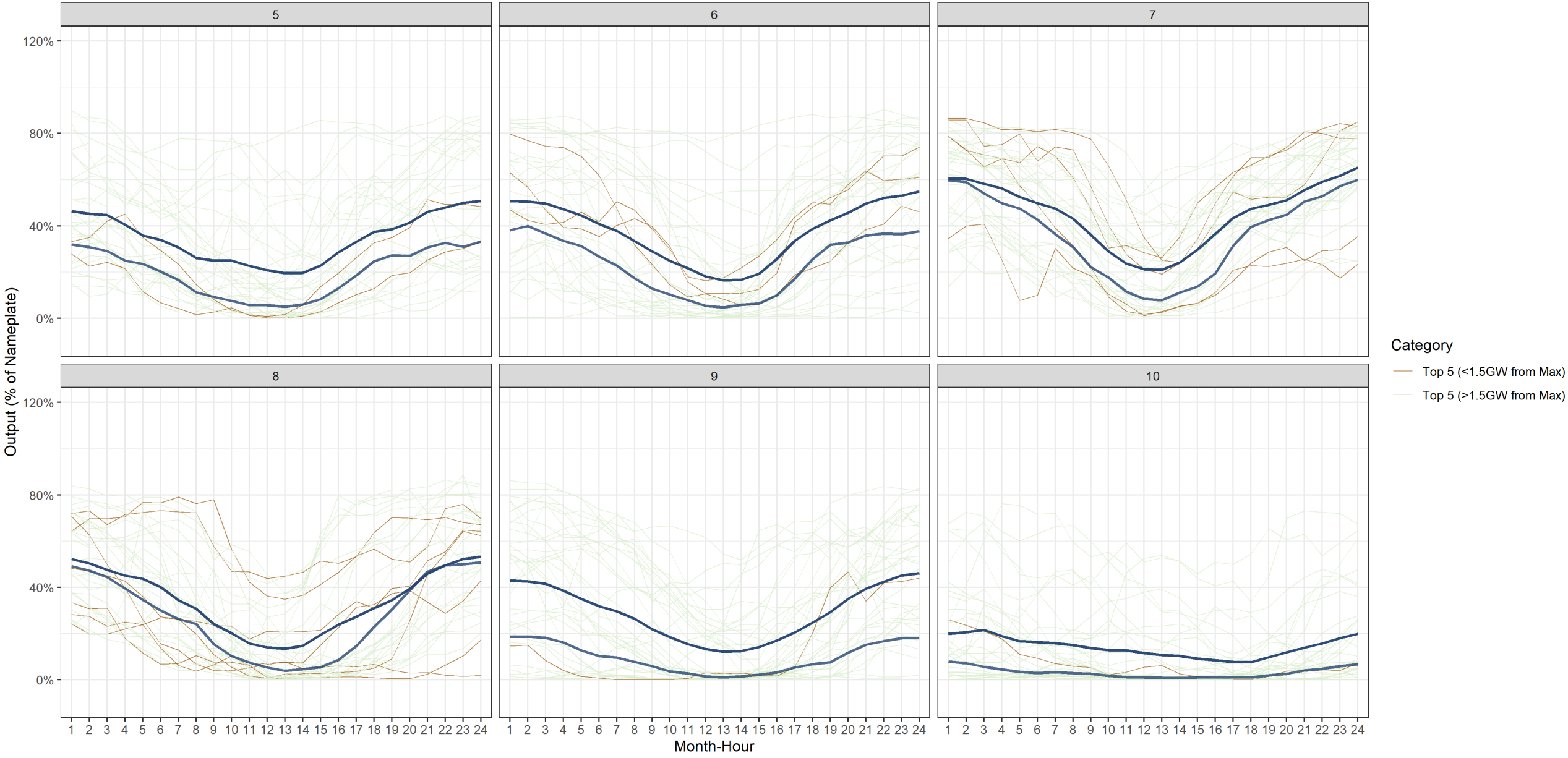
Benchmarking: Solar PV Tracking (S)



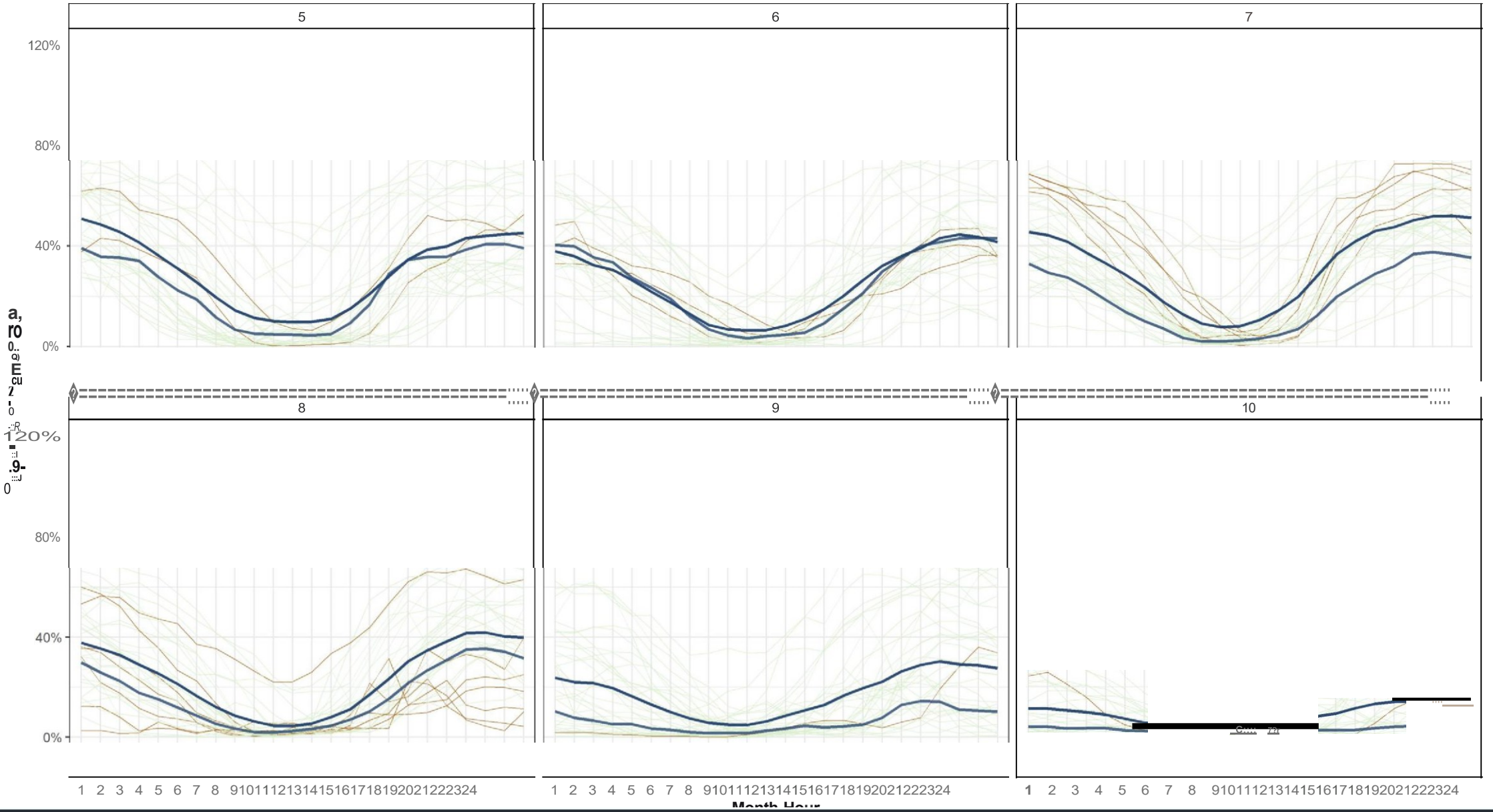
Benchmarking: Solar Thermal (S)



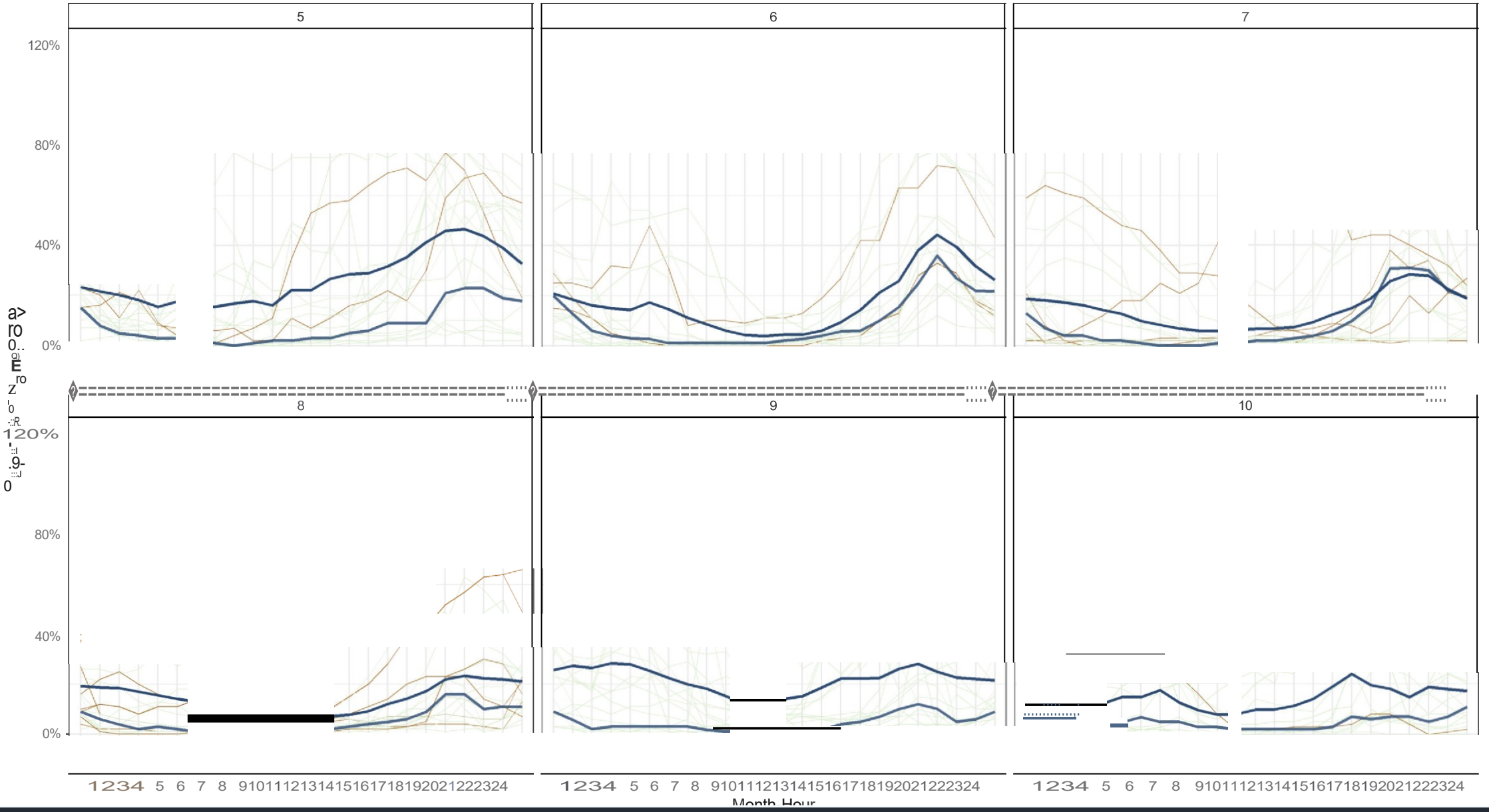
Benchmarking: Wind CA (N)



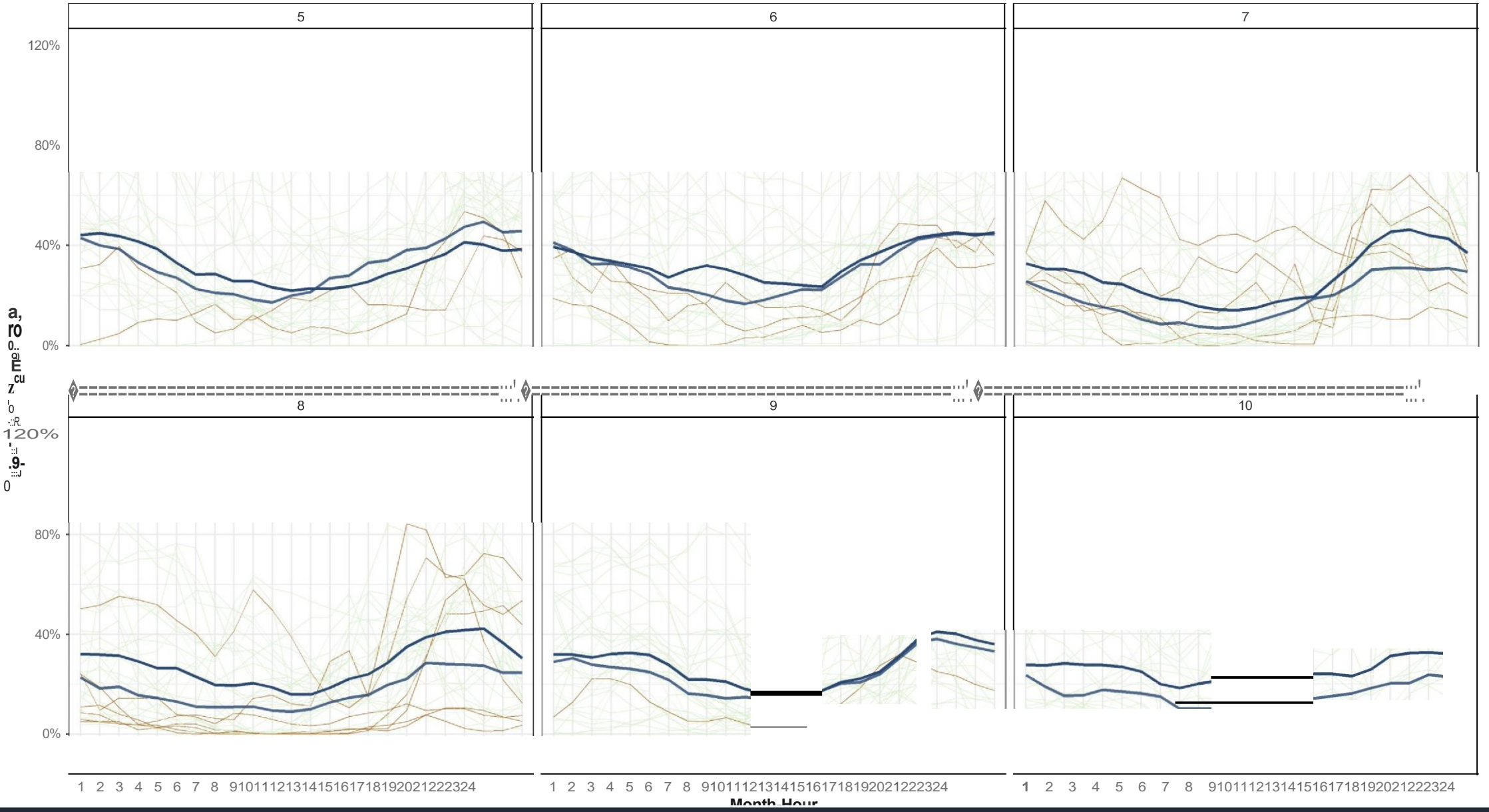
Benchmarking: Wind CA (S)



Benchmarking: Wind OOS (NW)



Benchmarking: Wind OOS (SW)



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August 10, 2023

California Public Utilities Commission
Energy Division
RAFiling@cpuc.ca.gov

Re: R.21-10-002 - Informal Comments of Pattern Energy on Solar and Wind Exceedance Analysis

Dear Energy Division,

Pattern Energy ("Pattern") appreciates the opportunity to submit these informal comments on the draft exceedance analysis for solar and wind resources (as served on July 20, 2023). As discussed further below, these comments offer the following recommendations to the Energy Division:

1. update the exceedance analysis to apply a 50% exceedance threshold applied to production on the top-5 historic or modeled load days,
2. differentiate Arizona and New Mexico wind resources and apply modeled data from the Integrated Resource Planning process ("IRP") to wind resources located in New Mexico, and
3. explicitly acknowledge that the exceedance analysis should be further refined and provide a schedule for further analysis before the Commission issues a decision applying capacity values to the 2025 RA compliance year.

Discussion

1. Energy Division Should Apply a 50% Exceedance Threshold to Wind Resources.

Pattern appreciates that the development of qualifying capacity ("QC") values is a critical aspect of meeting the reliability metrics for the Resource Adequacy ("RA") program. The publication of QC values can also have a significant impact on active contracting discussions for new resources. This is especially true for wind resources where the capacity value of wind can vary greatly between different geographic regions. The Commission recognized the need to differentiate wind by geographic regions when it adopted D.22-08-039 and found that "more accurately reflecting the value of wind across the regions will improve resource counting accuracy, send appropriate market signals for buyers of capacity, and align the RA program with the Integrated Resource Planning process." While the differentiated Effective Load Carrying Capability ("ELCC") values will now only be applied to IRP procurement, we continue to

believe that the ELCC values are an important barometer for evaluating whether the chosen exceedance thresholds accurately reflect capacity value.

D.23-04-010 provides direction to the Energy Division to apply PG&E's Top 5 Day methodology, "develop the solar and wind resource profiles," and "publish the non-confidential version of the exceedance calculations."[1] The average of the top 5 days is used as a benchmark to determine over/undercounting of a resource. Rather than attempting to align to a common benchmark on a seasonal basis, the Commission should directly use the benchmark to ensure consistent counting across regions and technology types.

Pattern and other parties are concerned that the exceedance threshold selection set forth in Energy Division's analysis released on July 20th disproportionately impacted wind technologies when compared to the current ELCC methodology. In the following table, Pattern presents its analysis of how the average NQC values derived from the July 20th published exceedance values compare to the ELCC values adopted for 2023.

Technology	Exceedance Threshold	% NQC from Exceedance	ELCC 2023	% Point Change	Percentage Change
Solar	70% All Season	25%	7%	+18%	+257%
CA Wind South	75% All Season	11%	15%	-4%	-27%
CA Wind North	80% Summer, 65% non-Summer	14%	27%	-13%	-48%
AZ/NM Wind	65% Summer 75% non-summer	24%	30%	-6%	-20%

Pattern understands that the Commission's Slice of Day decision did not select an exceedance methodology that benchmarks against the ELCC. We nevertheless believe that the ELCC is a valuable point of comparison for whether the applied exceedance thresholds are generally consistent with the capacity value signals for IRP procurement. In particular, while there are some issues with ELCC, it is an effective mechanism for identifying the reliability value of divergent locations for wind, which can provide much more reliable power when placed in high resource areas, like the ocean or the desert. This regional diversity value appears to be absent in the proposed exceedance methodology, which will negatively impact load-serving entities ("LSEs") which have already procured regional wind for compliance with IRP

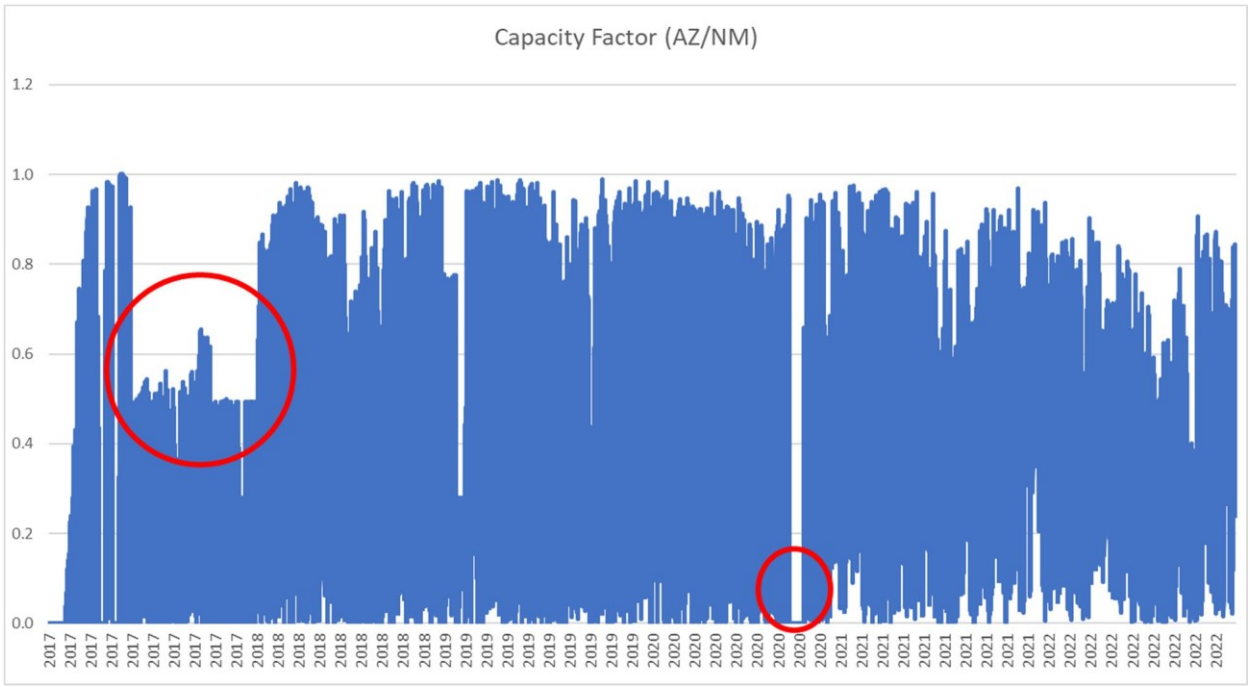
[1] D.23-04-010, Ordering Paragraph 5.

obligations. In light of disparity among different resources compared to their ELCC values, we are deeply concerned that the selected exceedance thresholds are arbitrary, underestimate the reliability value to the grid of regional wind, and will send inconsistent signals to offtakers compared to what is required by the IRP.

To help resolve this disparity, Pattern recommends applying a 50% exceedance threshold to all regions based on data from the top 5 load days. The selection of a 50% exceedance threshold would more closely align the capacity values to the median production value on the five worst load days and move away from setting arbitrary exceedance values for certain regions. This change is consistent with the Commission's broad direction to Energy Division to refine the Top5 Day methodology and select exceedance values for wind and solar resources.

2. The Commission Should Use Modeled IRP Data to Evaluate New Mexico Wind Resources and Distinguish these Resources from Arizona Wind Resources.

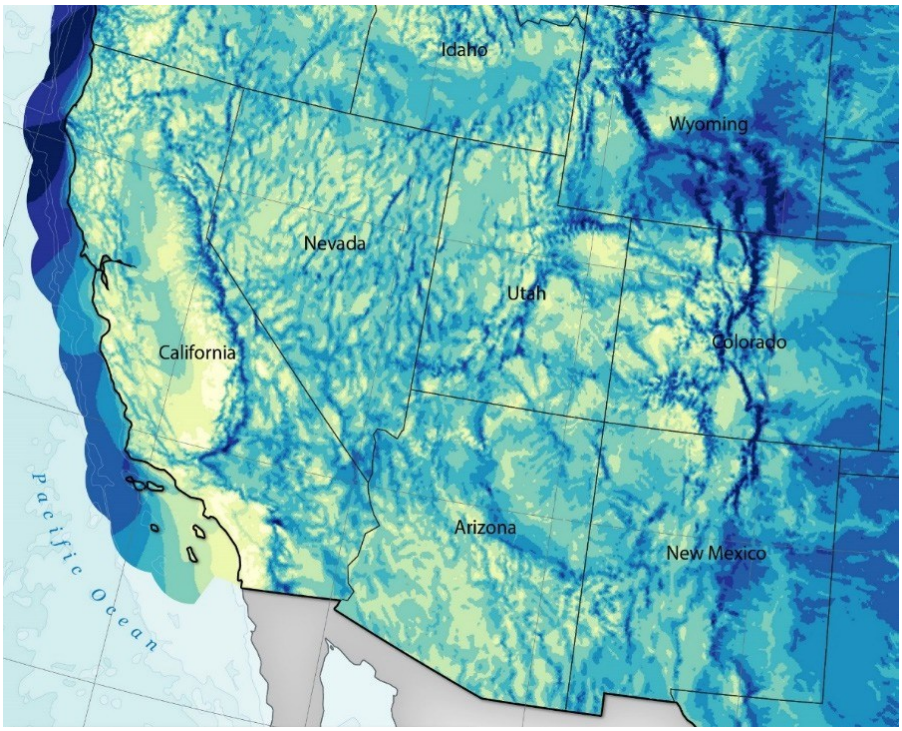
Pattern is concerned that the historical capacity factors for out-of-state wind uses a disproportionally small sample of wind farms that do not accurately represent the capacity value for New Mexico wind resources. The sample period seemingly draws upon only ~300MW of operating wind from New Mexico, while there is over 2,000 MW that has come online since 2020 and more than 3,500 MW under construction now. A small sample size skews the exceedance results and overstates the impacts of outages and transmission curtailment. This is clear in the following figure, which shows the capacity factors of the Arizona / New Mexico resources over the study period:



We also continue to express concern with conflation of Arizona and New Mexico wind resources in the Commission's capacity analysis. Arizona and New Mexico are highly differentiated from each other, much more different than northern and southern California wind, which are differentiated in the proposed methodology.

This is especially relevant for reliability assessments, because while Arizona and western New Mexico have wind profiles similar to Southern California, eastern New Mexico wind has similar capacity factors and profiles to that of California offshore wind. That is why eastern New Mexico wind has been such a large percentage of California power purchase agreements signed in the last few years. In order to plan for a reliable grid, Pattern suggests that proposed methodologies should result in similar findings of RA value for New Mexico wind and offshore wind. Including Arizona resources in the exceedance value for New Mexico wind would artificially reduce the reliability that California LSEs have already contracted for on behalf of the California system.

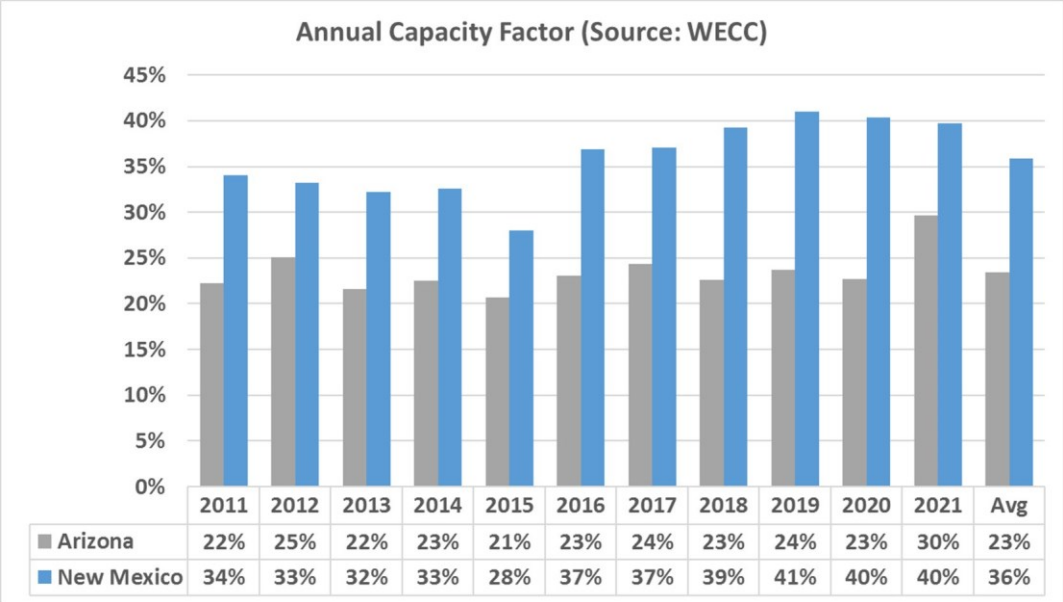
The following map, which is an excerpt of the Southwest portion of National Renewable Energy Laboratory's ("NREL") 2017 average annual wind speed shows this differentiation. Higher wind speeds in New Mexico are depicted in dark blue in the bottom right of this excerpt.[2]



[2] See NREL North American Annual Average Wind Speed at 100-Meter Above Surface Level (2017), available at: https://www.nrel.gov/gis/assets/images/wtk-100m-2017-01.jpg.

In order to send appropriate investment signals, the Commission should differentiate New Mexico and Arizona. We also request that Energy Division update its analysis of New Mexico wind resources to incorporate the IRP SERVM model data sets to bolster the historical data set in years where there are only a few operational projects.

The following chart[3] from WECC further illustrates this differentiation between New Mexico and Arizona, the former of which has capacity values nearly double that of the latter.



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Avg
Arizona	22%	25%	22%	23%	21%	23%	24%	23%	24%	23%	30%	23%
New Mexico	34%	33%	32%	33%	28%	37%	37%	39%	41%	40%	40%	36%

3. Energy Division Should Make Clear that it Plans to Update the Exceedance Analysis Prior to the 2025 RA Year.

As discussed above, qualifying capacity values are a key metric in the evaluation of contracts for new resources and as LSEs are contracting capacity in the RA program. The slice-of-day framework represents a major departure in how capacity values are calculated and is being closely watched by prospective offtakers. We are concerned that if the issues identified in these comments are not corrected, buyers will not have appropriate investment signals and there will be miss-alignment with the ELCC values used in the IRP proceeding. The Energy Division should acknowledge the need for further refinement and explicitly commit to evaluate alternative methods in the coming months, prior to the 2025 RA year.

Respectfully Submitted,

/s/

Johnny Casana
Pattern Energy
Johnny.casana@patternenergy.com

[3] https://www.wecc.org/epubs/StateOfTheInterconnection/Pages/Capacity-Factor-by-State.aspx.

Choing, Kelsey

From: Stephen A Keehn <stephen.keehn@sce.com>
Sent: Thursday, August 10, 2023 4:55 PM
To: Brant, Simone; Choing, Kelsey; RAfiling
Cc: Kaladhar R Bollampalli
Subject: [EXTERNAL] SCE's Comments on Energy Division's Solar and Wind Exceedance Analyses

Dear Simone and Kelsey:

SCE is happy to provide our comments on the Energy Division's solar and wind exceedance analyses which you published on July 21.

Summary
As a first point, SCE believes that the Energy Division has used the method that was discussed in the workshops and approved in D.23-04-010, and we don't believe that any changes to the basic structure of the exceedance calculations should be considered at this point. Parties were able to propose alternative methodologies during the workshops and now is not the time to reopen those discussions. It would be too confusing and time consuming to initiate those discussion again at this point. We do have one recommendation for a minor change, not to the methodology used, but adopting a seasonal-dependent profile for wind resources in Southern California.

Out-of-State Wind

SCE supports the Energy Division analysis for the Out-of-State Wind Exceedance profiles.

In-State Solar

SCE supports the Energy Division calculations for all **solar** resources (Solar Fixed/Tracking/Thermal) in both northern and southern California to use a 70% exceedance profile for the full year

IN-State Wind

For Wind resources in northern California, SCE supports the Energy Division calculations for a Summer Exceedance profile of 80% and a Non-Summer Exceedance profile of 65%.

For **wind** resources in southern California, SCE proposes using a seasonal-dependent calculation to provide a better fit, rather than the Energy Division's 75% exceedance profile for the full year. However, unlike the profile for Northern California Wind, we propose that the seasons be Spring and Non-Spring. Our preference would be to have the Spring season defined as March – June, as shown in Option 1. However, if a more traditional definition of Spring is required, then we would propose Option 2.

- *Option 1*: Assuming a non-traditional season framework (that is, include June with Spring months), we recommend:
    - Spring (March – June): 75% Exceedance profile
    - Non-Spring (July – February): 60% Exceedance profile
- *Option 2*: Assuming a traditional season framework, we recommend:
    - Spring (March – May): 75 % Exceedance profile
    - Non-Spring (June – February): 60% Exceedance profile
        - Note: This choice for non-spring months is best for August and September (months of greater reliability concern), while less ideal for June (which is why option 1 is preferred).

Thank you for the opportunity to provide comments. If you have any questions, please feel free to contact me.

Stephen Keehn
Reliability & Energy Markets Senior Advisor
Regulatory Affairs
M. 916-622-2076

Choing, Kelsey

From: Tom Beach <tomb@crossborderenergy.com>
Sent: Thursday, August 10, 2023 5:40 PM
To: Brant, Simone; Choing, Kelsey; RAfiling
Cc: 'Jeanne Armstrong'; 'Patrick McGuire'
Subject: [EXTERNAL] Comments from SEIA on the solar exceedance analysis

Kelsey / Simone –

In response to your email of July 20, 2023, the Solar Energy Industries Association (SEIA) would like to provide comments on the solar exceedances analysis you circulated on that date. Generally, we think that your analysis follows the guidance of D. 23-04-010, but we observe that the choice of the exceedance level that "best fits" the 5 worst days data is a matter of judgement and of what one looks at to judge the best fit.

Your analysis seems to indicate that you are selecting a 70% exceedance for solar in both the summer and "winter" (i.e. non-summer) months based on allowing the exceedance profile values to be larger than the 5 worst days data by only a small amount (less than 10%) in any hour. It would be great to have more details on your thought process other than simply the spreadsheet.

Our comments on your analysis are as follows:

1. We would use June-September as the summer months, rather than June-October. PG&E and SCE use June-Sept as their summer season, only SDG&E uses June-Oct.
2. Not all hours have the same importance for reliability, so we would also look specifically at the fit in the 4p – 9p peak period.
3. Your analysis seems to look for the largest difference between the exceedance profile and the 5 worst days in any day of the year, even if you are looking for an exceedance for just a season (i.e. either for the summer or winter). If one is looking for a summer exceedance value, we would only look at the differences in the summer months, and similarly for the winter.

Please accept our apologies if we are mischaracterizing what you did – again, we would value a written description of your approach.

We have applied the three points listed above to your analysis, and produced a revised version which can be accessed at the link below. We think that these revisions indicate that a 70% exceedance in June-September and a 60% exceedance in the other non-summer months is a better fit for the solar data. We have no comments on the wind exceedances.

Dropbox Link: https://www.dropbox.com/scl/fi/qt87ujynb258ty8p01zpe/Exceedance-Analysis-InState-SolarWind-SEIA-revisions-to-the-solar-exceedences.xlsx?rlkey=0wmcuw1btzxgc9i15qbssc8va&dl=0

Please let us know if you have any questions about these comments, and we would be happy to meet with you about our perspective if you would like to discuss this is more detail.

Best,

Tom

Tom Beach, Principal
Crossborder Energy
2560 Ninth Street, Suite 213A
Berkeley, CA 94710

510-549-6922

Consultant to SEIA

APPENDIX D

INFORMAL COMMENTS ON MASTER RESOURCE DATABASE

The Public Advocates Office's Informal Comments on the Energy Division's Master Resource Database Draft 2

R.21-10-002

Submitted by	Organization	Date Submitted
Kyle Navis Senior Analyst Patrick Cunningham Senior Analyst Phone: (415) 703-2840 Email: kyle.navis@cpuc.ca.gov	Public Advocates Office - California Public Utilities Commission 505 Van Ness Avenue San Francisco, CA 94102	July 28, 2023

The Public Advocates Office at the California Public Utilities Commission (Cal Advocates) submits the following informal comments on the Master Resource Database Draft 2 (MRD2). The first section of these comments begins with a discussion of considerable ambiguity in Decision (D.) 23-04-010's language governing exceedance levels for solar and wind resources. Subsequent sections suggest pathways forward for the Energy Division (ED) to comply with D.23-04-010 and provide clarity for stakeholders. Cal Advocates makes several recommendations:

- ED should clarify its interpretation of D.23-04-010, Conclusion of Law #5;
- ED should follow the clearest and most reasonable reading of D.23-04-010 and utilize the Top 5 Day load profile as the exceedance profile for solar and wind resources; and
- If ED intends to utilize the proposed novel exceedance values in the MRD2, it should hold a stakeholder workshop to show how it selected the exceedance levels and to hear stakeholder feedback.

I. D.23-04-010 Substantially Misunderstands the Stakeholder Working Group Report's Discussion of Resource Counting Proposals and Provides Conflicting Guidance to the Energy Division

D.23-04-010 provides the following guidance to ED with regards to resource counting proposals for solar and wind resources:

> Energy Division is directed to develop the exceedance profiles based on PG&E's Top 5 Day methodology and to publish the non-confidential version of the exceedance calculations. Should any issues arise with the use of PG&E's Top 5 Day methodology, parties will have an opportunity to provide informal comments.[1]

Conclusion of Law #5 further states:

> Pacific Gas and Electric Company's Top 5 Day methodology is adopted as the exceedance methodology to determine profiles for solar and wind resources under the 24-hour slice-of-day framework. […] Energy Division is directed to develop the solar and wind resource profiles, which will be incorporated into the Master Resource Database, and to publish the non-confidential version of the exceedance calculations.[2]

The Slice of Day Reform Working Group (WG) series was highly complex and covered a wide range of topics, and it is understandable that some confusion may have arisen from the process. Unfortunately, the language in D.23-04-010 quoted above reflects a substantial misunderstanding of the resource counting proposals considered during the Slice of Day Reform Working Groups.[3] This misunderstanding led to ambiguous instructions for ED's subsequent determination of wind and solar net qualifying capacity (NQC) values published in the MRD2.

To begin with, the Pacific Gas and Electric Company's (PG&E) "Top 5 Day methodology" described by D.23-04-010 does not exist in the record as a proposal. D.23-04-010's use of the phrase "Top 5 Day methodology" appears to combine two different components of PG&E's proposal, and the "methodology" Energy Division uses resembles a data analysis used to justify PG&E's proposal. During the WG process PG&E created a Top 5 Day load profile to *benchmark* different

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[1] D.23-04-010, *Decision on Phase 2 of the Resource Adequacy Reform Track*, April 6, 2023 at 83.

[2] D.23-04-010 at 104-105. The Commission issued a Revised Final Decision on April 4, 2023, two days prior to the CPUC Voting Meeting wherein the Commission adopted D.23-04-010. The Commission did not provide an opportunity for parties to comment on the Revised Final Decision. The Revised Final Decision adopted the contradicting language discussed in these comments instead of Cal Advocates' 12-season proposal, which was the most accurate, transparent, predictable, and least arbitrary methodology in the WG report.

[3] *Workshop Report on Final Proposals from Reform Track Phase 2 Workstreams 1 – 3 Submitted by Pacific Gas and Electric Company (U 39 E)*, November 15, 2022 (WG Report) at 24-77.

exceedance profiles against.[4] PG&E compared potential exceedance profiles against the Top 5 Day load profile to inform its proposal to use 50% exceedance level for October-May and 70% for June-September for both solar and wind resources.[5] Yet D.23-10-004 incorrectly characterizes the "Top 5 Days" proposal as a six-step methodology utilized by PG&E to arrive at the 50% and 70% exceedance levels.[6] However, **the content of PG&E's WG Report proposal was the resulting 50% and 70% exceedance levels**, *not* the six steps it used to arrive at them.[7] Indeed, the six steps of PG&E's data analysis cannot be replicated by outside stakeholders to arrive at the same conclusions as ED without input from ED, because subjective and arbitrary judgments are required to set the exceedance levels in that analytical framework. To complicate matters further, PG&E's comments on the proposed decision reflected a change in PG&E's position regarding PG&Es preferred exceedance profile.[8]

As background, during the WG process the California Wind Energy Association (CalWEA) proposed to use the Top 5 Day load profile *itself* for counting wind and solar resources.[9] Importantly, PG&E modified its own position during Opening Comments[10] and Reply Comments[11] on the

[4] See the Figure 27 Proposal Decision Tree in the WG Report at 56. "PG&E Top 5 Days" was a high load day profile-based proposal, it was not a methodology for selecting an exceedance profile.

[5] WG Report at 26.

[6] D.23-04-010 at 21.

[7] WG Report at 26-28.

[8] The Proposed Decision for D.23-04-010 was served on March 3, 2023. Available at: https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M502/K991/502991728.PDF.

[9] WG Report at 37-38. Cal Advocates supported CalWEA's proposal as a secondary option if the Commission did not adopt the 12-season approach, although Cal Advocates also noted that the CalWEA approach did not fit the definition of an exceedance profile. See *Comments of the Public Advocates Office on the Workshop Report on Final Proposals From Reform Track Phase 2*, December 1, 2022 at 5.

[10] "[T]he Commission should select the high-load day profile itself, as it is the simplest and most accurate method for determining performance on high-load days." *Opening Comments of the Pacific Gas and Electric Company (U 39 E) on the Proposed Decision on Phase 2 of the Resource Adequacy Reform Track*, March 23, 2023 at 3.

[11] "To simplify the process and remove unnecessary analytical steps, PG&E continues to urge the Commission to revise the PD to use the high-load day profiles." *Reply Comments of the Pacific Gas*

Proposed Decision to prefer the Top 5 Day load profile itself (CalWEA's approach) ahead of PG&E's primary proposal to use 50% in summer months and 70% in non-summer months.[12]

Therefore, it is unclear what the Decision's use of "PG&E's Top 5 Day methodology" refers to. Examining the record established by the WG report, the phrase could variously imply:

- PG&E's Top 5 Day load profile (PG&E's final position; supported by CalWEA and by Cal Advocates as a secondary option);
- PG&E's proposal to use a 50% exceedance level in non-summer and 70% in summer; or
- Something else.

The novel exceedance levels used in the MRD2 suggest that ED interprets the ambiguity surrounding "PG&E's Top 5 Day methodology" as giving ED discretion to choose its own exceedance levels. This contravenes the Commission's preference that the WG process determine the exceedance levels to be used in Slice of Day.[13] By requiring stakeholders to develop the Slice of Day reform proposal over the course of the WG process, the Commission clearly intended the use of a stakeholder process to propose and vet the ultimate methodology to determine solar and wind resource counting. The prior decision chartering the final round of WGs concluded, "PG&E's proposed exceedance methodology should be used to determine wind and solar profiles, **with the appropriate exceedance level to be determined as part of workstreams.**"[14] The ambiguity in D.23-04-010 means that—at the very least—stakeholders need ED to clarify its interpretation of the relevant sections.[15]

II. The Energy Division Should Use the Top 5 Day Load Profile to Set Exceedance Levels

The clearest and most reasonable reading of D.23-04-010's discussion of solar and wind resource counting is that the Commission intended that ED use PG&E's Top 5 Day load profile as the exceedance profile. This means that ED should use the Top 5 Day load profile as the exceedance profile. CalWEA initially proposed the use of the Top 5 Day load profile as the exceedance profile,

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and Electric Company (U 39 E) on the Proposed Decision on Phase 2 of the Resource Adequacy Reform Track, March 28, 2023 at 2.

[12] Again, PG&E did not put forward the six steps used as motivation as a proposal.

[13] D.22-06-050, Conclusions of Law 13 at 123.

[14] D.22-06-050, Conclusions of Law 13 at 123, emphasis added.

[15] Informal discussions between Cal Advocates and other stakeholders on this matter have confirmed that there is a wide range of interpretations in the stakeholder community.

and PG&E subsequently supported that approach in its comments on the proposed decision. Cal Advocates also supported the Top 5 Day load profile approach as a secondary option. Cal Advocates recommends that ED revise the MRD2 to comply with the clearest and most reasonable reading of D.23-04-010 and utilize the Top 5 Day load profile for solar and wind resource counting. If ED does not utilize the Top 5 Day load profile for solar and wind resource counting, the additional steps described below are necessary to ensure adequate transparency for stakeholders.

III. The Energy Division Should Hold a Workshop to Show How It Selected the Exceedance Levels Used in the MRD2 and to Hear Stakeholder Feedback

The MRD2 utilizes novel exceedance levels for solar and wind resources that have not been vetted by stakeholders.[16] No stakeholder proposed using the selected exceedance profiles during the Slice of Day Reform Working Group (WG) process.[17] The exceedance levels in the MRD2 appear to be selected entirely at ED's discretion, without reference to the extensive analysis undertaken by stakeholders during the WG process. Cal Advocates acknowledges that ED shared the workbooks for setting the exceedance values on July 20, 2023, but these workbooks provide insufficient context to understand ED's ultimate selection of the exceedance values used in the MRD2.[18]

Beyond the lack of WG record to justify the MRD2's exceedance levels, those novel exceedance levels are unsupported by any calculations or mathematical reasoning. D.23-04-010 anticipates the need for transparency and directs ED to "publish the non-confidential version of the exceedance calculations."[19] Notwithstanding the ambiguities regarding D.23-04-010's requirements for calculating exceedance levels, ED should provide additional context to stakeholders if it intends to move forward with the exceedance levels in the MRD2.[20] The workbooks shared with stakeholders on July 20, 2023 lack a narrative discussion necessary to understand ED's decision-making process. ED can remedy this situation by holding a workshop to explain the outcomes it prioritized to establish the exceedance levels in the MRD2 and clarify its interpretation of D.23-04-010, Conclusion of Law 5.

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[16] The MRD2 uses 70% exceedance levels for all solar resources and months, and 65% exceedance levels for non-summer months and 80% for summer months for Northern California wind resources and 70% year-round for Southern California wind resources. MRD2, "VER Exceedance Profiles" tab.

[17] Working Group Report at 57-58.

[18] Cal Advocates anticipates providing additional, specific informal comments on the workbooks by August 10, 2023.

[19] D.23-04-010 at 105.

[20] D.23-04-010 at 84.

Such a workshop should also include stakeholder feedback and suggestions to improve the final selection of the exceedance values for solar and wind resources.

IV. Conclusion

Cal Advocates requests the Commission adopt the recommendations herein. Please contact Kyle Navis with any questions or comments at kyle.navis@cpuc.ca.gov.

Informal Comments of Pacific Gas and Electric Company on the Draft Master Resource Database - Due July 28, 2023

Pacific Gas and Electric Company ("PG&E") provides the following informal comments on the Draft Master Resource Database.

I. PG&E COMMENTS

A. Transmission Constraints & Other Monthly NQC Haircuts

How will the hourly QC values for SOD reflect (or not) the transmission constraints that CAISO applies to the monthly NQC values?

E.g.

Using "BLM East" (below) as a baseline example, you can see the resource has a Pmax of 72 MW, and should be able to claim at least 90% as monthly NQC, according to the 2023 Tech Factors. However, the 47 MW transmission constraint results in a 47 MW NQC for all months.

When claiming this resource for SOD, it would receive 47 MW in all hours, for all months. This makes sense.

Resource ID	Generator Name	Resource Type	Pmax/NDC	JAN	FEB	MAR	APR	MAY	JUN
BLM_2_UNITS	BLM EAST Facility	Geothermal	72	47	47	47	47	47	47

JUL	AUG	SEP	OCT	NOV	DEC	Deliverability MW	Comments
47	47	47	47	47	47	47.00	NQC reduction required due to transfer of deliverability to a new resource. (Adjustment already applied Jan-Dec.)

Looking at Ramona Solar, you can see there's an 80% constraint on deliverability.

- You can see this correctly reflected in the CAISO NQC for September, where the ELCC is 11.1% for Solar: 4.32 * .111 = .48 MW NQC.
- Applying the 80% haircut gets you to the .38 MW value on the CAISO NQC List.
- Meanwhile, the VER Hourly QC for SOD shows the full MW value, same as any other solar resource.

Resource ID	Generator Name	Resource Type	Pmax/ NDC	Nameplate	Deliverability MW	Expected Sept CAISO NQC	Actual Sept CAISO NQC
CRELMN_6_RAMSR3	Ramona Solar Energy	Solar_1Axis	4.32	4.4	80.00%	0.48	0.38

B. Co-Located Haircuts

How will the hourly QC values for SOD reflect (or not) the co-located haircuts that apply to the monthly NQC values?

E.g.

- Looking at Almasol Solar, you can see it's a co-located resource.
    - While they don't tell us the haircut percent, you can see the actual CAISO NQC for September is 4.0 MW, significantly lower than the standard 11.1 MW for a non-co-located solar resource.
    - Meanwhile, the VER Hourly QC for SOD shows the full MW value, same as any other solar resource.

Resource ID	Co-located Resource ID	Generator Name	Resource Type	Pmax/ NDC	Nameplate	Deliverability MW	Expected Sept CAISO NQC	Actual Sept CAISO NQC
ALMASL_2_GS6SR6	ALMASL_2_AL6BT6	Almasol Generating Station 6	Paired_Solar_1Axis	100	100		11.1	4.00

C. Energy Only (EO) Resources

Will Energy Only (EO) resources on the CAISO NQC List continue to have non-zero SOD QC values?

The following co-located solar resources are Energy Only (EO) on the CAISO NQC list, but they show up as non-zero values on the VER Hourly QC. All other EO solar and wind resources received a zero QC value for SOD. I don't follow the logic behind their decision to allow the EO side of co-located resources claim the full QC value for SOD.

- BLKCRK_2_SOLAR1

- DRACKR_2_DS3SR3
- DRACKR_2_SOLAR2
- MSTANG_2_SOLAR

APPENDIX E

INFORMAL COMMENTS ON PLANNING RESERVE MARGIN CALIBRATION TOOL

Slice of Day Planning Reserve Margin Calibration Tool

Informal Comments of the CAISO

November 13, 2023.

CAISO Comments

The CAISO appreciates the opportunity to provide informal comments on the Slice of Day Planning Reserve Margin (PRM) Calibration Tool and October 25, 2023 workshop hosted by California Public Utilities Commission (CPUC) Energy Division staff.

As suggested by the CAISO and other parties at the October 25 workshop, Energy Division staff should test the Slice of Day portfolio resulting from the 8.2% PRM based on the peak hour of the year. Specifically, staff should test the Slice of Day portfolio in the SERVM model to determine whether the resulting portfolio will meet at least a 1 in 10 loss of load expectation (LOLE). Although the SERVM portfolio meets the 1 in 10 LOLE target with addition of perfect capacity, this does not imply that translating to Slice of Day with a single annual 8.2% PRM based on the peak hour of the year will result in the same portfolio studied in SERVM.

The 8.2% PRM calculated also appears unreasonably low, barely covering operating reserve requirements that must be met at all times in the SERVM model and allowing for very limited deviation from the California Energy Commission (CEC) demand forecast. Energy Division staff should host additional workshops to discuss PRM testing results and open questions, and the CPUC should also allow for additional formal record on PRM issues in the resource adequacy proceeding.

Energy Division should also assess whether a single annual PRM approach is sufficient to ensure reliability across all months of the year, or if alternative approaches should be reconsidered.

Ultimately, the CPUC should set the PRM under Slice of Day at a level that will ensure the RA program will produce a portfolio that meets at least a 1 in 10 LOLE for the year.

Energy Division Should Test the Slice of Day Portfolio with Single Annual PRM Based on the Peak Hour of the Year in SERVM.

As suggested by the CAISO and other parties on the October 25 workshop, Energy Division should test the Slice of Day portfolio with the 8.2% PRM based on the peak hour of the year applied to all hours of the year in SERVM to determine whether the resulting Slice of Day portfolio will meet at least a 1 in 10 LOLE. Although the SERVM portfolio meets the 1 in 10 LOLE target, this does not imply the Slice of Day with a single annual 8.2% PRM based on the peak hour of the year will result in the same portfolio studied in SERVM.

Another question that the CPUC should address is that if a single PRM determined based on the peak hour of the year is sufficient to ensure reliability across all months of the year. Last year, Astrape showed that selecting the single annual PRM for Slice of Day based on the peak month of the year

introduces reliability risk in other months, and resulted in a 0.4 LOLE.[1] This result was concerning, and prompted the CAISO and other parties to recommend the CPUC take alternative approaches to setting the PRM under Slice of Day.[2] The Energy Division approach presented on October 25 is the same approach that proved to result in an unreliable portfolio last year. Unlike last year, however, Energy Division did not test the resulting Slice of Day portfolio. Energy Division did not show that the Slice of Day calibration tool would select the same portfolio as the SERVM model did at 14 percent PRM (perfect capacity) or 23 percent PRM (non-perfect capacity), over gross load.

In the October 25 workshop, Energy Division seemed to agree to conduct testing of the Slice of Day portfolio in the SERVM model. The CAISO again urges the Energy Division conduct this stress testing. Energy Division should also discuss its results at a follow-up workshop on PRM issues under Slice of Day. Ultimately, the CPUC must set PRM at a level to ensure resource adequacy portfolios are sufficiently reliable across all months and hours of the year that covers a distribution of potential load levels, not just a the single 1-in-2 forecast.

Energy Division Should Hold Additional Workshops to Review PRM Testing Results and Discuss Potential Changes to the PRM Calibration Tool with Parties.

In the October 25 workshop, there was an Excel calculation error in the calibration workbook. Parties also provided feedback on changes that Energy Division should consider to the PRM Calibration Tool. As discussed above, parties also requested that Energy Division test the resulting Slice of Day portfolio in SERVM under the PRM approach presented by Energy Division to determine whether the portfolio will ensure at least a 0.1 LOLE.

Although Decision (D.) 23-06-029 directed that Energy Division publish the results of the PRM calibration tool followed by a workshop and informal comment opportunity, the Energy Division should hold additional workshops to discuss PRM testing results and corrections and updates to the PRM calibration tool with parties. As evidenced in the October 25 workshop, there are several open issues and questions related to the PRM under Slice of Day that Energy Division should resolve with parties before the Slice of Day test year and go-live.

The CAISO is Concerned the PRM Calculated by Energy Division is Unreasonably Low.

In the October 25 workshop, Energy Division suggested a 6.2 percent single annual PRM, based on its February 2023 LOLE study and the 2021 IEPR Additional Transportation Electrification (ATE) Forecast. After correcting for an Excel calculation error in the calibration workbook, the single annual PRM changed to 8.2 percent.

The CAISO is concerned that an 8.2 percent PRM is still unreasonably low. An 8.2 percent PRM barely covers CAISO operating reserve requirements (about 6 percent of load) that must be met at all times in the SERVM model. Beyond operating reserves, an 8.2 percent PRM leaves little room for actual load to exceed the CEC IEPR 1 in 2 forecast (*i.e.,* by less than 2.2 percent). The 1 in 2 forecast by definition

[1] Energy Division, Slice of Day – Load Forecast Process Update and Loss of Load Studies Translation for RA Proceeding Update, October 6, 2022: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/resource-adequacy-homepage/resource-adequacy-compliance-materials/resource-adequacy-history/10-6-2022-wrap-up/workshop-10_energy-division_221006.pdf

[2] See comments of CAISO, MRP, NRDC on Phase 3 Proposed Decision (D.23-06-029)

implies there is a 50 percent probability that actual load will be higher than the forecast. There are key examples in recent years (*i.e.,* 2022 August/September heatwave) where actual load exceeded the 1 in 2 forecast by 11.1%.[3] The CPUC must ensure the Slice of Day portfolio can meet at minimum, 1 in 2 load conditions with reasonable deviations, plus operating reserve requirements.

Lastly, the 14 percent PRM in SERVM based on gross load and perfect capacity is significantly higher than the 8.2 percent PRM based on managed load. This disparity raises questions about the equivalence of PRM levels to ensure a 0.1 LOLE across the year.

Energy Division Should Assess Whether a Single Annual PRM Approach is Sufficient to Ensure Reliability Across the Year.

As shown by Astrape last year, a single annual PRM based on peak hour of the year may not guarantee reliability across all other hours of the year. A single annual PRM approach is problematic when the PRM determined at Hour 19 in September is used for other months based on the peak load of each month. This is because resource adequacy showings in different months are different. In September, almost all qualified resources are needed on resource adequacy showings. In other months, where load is lower than September, the shares of renewable and storage resources in resource adequacy showings may increase. These resources' contributions to reliability are uncertain and may be less than the expected levels. Specifically, with increase in the shares of renewable resources in the portfolio may lead to an overvaluation of their reliability benefits. This is because their effective per MW contribution to reliability (ELCC) may be lower than in other months with higher load. If the CPUC adopts a single annual PRM, the months with lower load and higher shares of renewable and storage resources, may have higher reliability risk. The portfolio may not be able to meet the 1 in 10 LOLE target. The CPUC must make sure resource adequacy showings are sufficient in *all* months.

Parties discussed these issues at length last year in Slice of Day workshops and in comments on D.23-06-029, and alternative approaches such as monthly PRMs were considered. Energy Division should assess further whether a single annual PRM approach is appropriate for the resource adequacy program.

The CPUC should also allow for additional formal record on PRM issues including the viability of a single annual PRM approach, and seek resolution on these issues before Slice of Day goes live.

[3] CAISO September 2022 Summer Market Performance Report, p. 49: https://www.caiso.com/Documents/SummerMarketPerformanceReportforSeptember2022.pdf

The Public Advocates Office's Informal Comments on the Energy Division's Workshop on Slice of Day Calibration Tool and Thermal Ambient Derates

R.23-10-011

Submitted by	Organization	Date Submitted
Kyle Navis Senior Analyst Patrick Cunningham Senior Analyst Phone: (415) 703-2840 Email: kyle.navis@cpuc.ca.gov	Public Advocates Office - California Public Utilities Commission 505 Van Ness Avenue San Francisco, CA 94102	November 13, 2023

The Public Advocates Office at the California Public Utilities Commission (Cal Advocates) submits the following informal comments on the Workshop on Slice of Day (SOD) Calibration Tool and Thermal Ambient Derates (the Workshop). Cal Advocates makes the following recommendations about the current iteration of the SOD Calibration Tool:

- The battery storage and pumped storage hydro dispatch profiles used in the SOD Calibration Tool should reflect the aggregated load-serving entity (LSE) showings for the SOD test year;
- The underlying resource portfolio used as the starting point for the SOD Calibration Tool should incorporate resources that came online after January 2023;
- The Energy Division should implement a monthly benchmarking exercise to ensure that the September Planning Reserve Margin (PRM) is sufficient to cover reliability needs in months with identified Loss of Load Expectation (LOLE); and
- The Energy Division should fix the typo that excludes Southern California wind resources from the PRM.

I. The battery storage and pumped storage hydro dispatch profiles used in the SOD Calibration Tool should reflect the aggregated LSE showings for the SOD test year.

The SOD Calibration Tool is intended to translate the 17% PRM mandated by D.23-06-029[1] into a margin that can be applied across all hours in every month.[2] The deployment hours of battery energy storage (BES) and pumped storage hydro (PSH) resources can be placed by each load-serving entity (LSE) into their respective hourly showings at their discretion and need. BES and PSH are dispatched by the California Independent System Operator (CAISO) and SERVM in periods and volumes that likely diverge from how LSEs will place these resources in their respective stacks. A key feature of the SOD reform was that LSEs must demonstrate adequate capacity in all hours, combined with an energy sufficiency check, *relative to their individual LSE load profile*. The diversity in load profile by LSE means that BES and PSH resources may be placed in resource showing stacks at different times to meet different needs, which will not necessarily correspond to the CAISO historical trends or SERVM model. Crucially, this means that it is unlikely that all available BES and PSH capacity will be shown during net peak load hours in the SOD Calibration Tool (even if, theoretically, it may all be dispatched at net peak in the operational time frame).

The SOD Calibration Tool's assumption of dispatching all available BES and PSH at net peak artificially raises the PRM necessary for LSEs to meet the 0.1 Loss of Load Expectation reliability standard identified in the study that generated the resource portfolio. The final step of the SOD Calibration Tool seeks to maximize the PRM level until the highest RA requirement can go no higher without exceeding the Total Supply in any hour. The key mismatch is in assuming that all storage resources will be shown in the same set of (up to six) hours by all LSEs when LSEs have discretion to show their storage resources in any hour to meet their need. Utilizing the actual LSE showings of storage resources to populate SOD PRM would produce a correct SOD PRM for all hours.

II. The underlying resource portfolio used as the starting point for the SOD Calibration Tool should incorporate resources that came online after January 2023.

Energy Division staff indicated verbally during the Workshop that the October LOLE study incorporated resources added to system between August 2022 and January 2023. The same study

[1] D.23-06-029, *Decision Adopting Local Capacity Obligations for 2024-2026, Flexible Capacity Obligations for 2024, and Program Refinements,* June 29, 2023 at Ordering Paragraph 7. Available at: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M513/K132/513132432.PDF.

[2] D.23-04-010, *Decision on Phase 2 of the Resource Adequacy Reform Track,* April 6, 2023 at 5, 55, 59-60, and A-2. Available at: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M505/K753/505753716.PDF.

also used 2,200 megawatts (MW) of perfect capacity (PCAP) to calibrate a 0.1 LOLE.[3] Cal Advocates recommends that any subsequent LOLE studies utilize the most recently available information on In-Development and Online Resources. For instance, the October 2023 LOLE study ideally would have used the resources shown on the "Online + In-dev Resources" tab of the *Aggregated RESOLVE LSE Plan and Baseline and Dev Resources, Updated 9/20/2023* workbook posted on the CPUC's 2022-2023 Integrated Resource Plan Cycle Events and Materials.[4] A substantial amount of capacity is expected to come online in 2024[5] and incorporating those new grid-connected resources would improve the accuracy of the PRM Conversion Tool and the LOLE studies. Energy Division should continue to use the current resource lists, including resources that are expected to come online in a study year, beyond the 2024 Test Year.

III. The Energy Division should implement a monthly benchmarking exercise to ensure that the September PRM is sufficient to cover reliability needs in months with identified LOLE.

The studies Energy Division staff used to calibrate a portfolio to 0.1 LOLE both assume that all capacity contracted to meet the September peak will be contracted for all months of the year. However, it is unclear if the PRM identified using a September portfolio will be adequate to ensure reliability in the other months with identified LOLE, especially July and August. To prevent reliability issues, Cal Advocates recommends that Energy Division use the SOD Calibration Tool to stress-test the identified PRM (which is based on September load and portfolio assumptions) using the August and/or July portfolio assumptions. This stress test would require utilizing resource portfolios that reflect the actual levels of capacity shown by LSEs in the relevant months.

IV. The Energy Division should fix the typo that excludes Southern California wind resources from the PRM.

Cal Advocates identified a typo in the workbooks circulated by the Energy Division during the Workshop. The "Total Supply" sums in Row 28 of the Dashboard tabs of the workbooks do not include Southern California wind resources. For example, the Total Supply cell for Hour Ending 1 should be "=SUM(F4:F25)," with each subsequent cell in Row 28 changed to include Southern

[3] See *Resource Adequacy Slide of Day Translation Tool and Update to Thermal Derate Model*, slide 16. Available at: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/resource-adequacy-homepage/resource-adequacy-compliance-materials/resource-adequacy-history/r2310011sodtranslationtoolthermalderatemodel.pdf.

[4] Available at: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/long-term-procurement-planning/2022-irp-cycle-events-and-materials.

[5] *Joint Agency Reliability Planning Assessment,* August 2023 at 5-6. Available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=251991.

California wind resources. Implementing this change and rerunning the Solver optimization will result in a higher SOD PRM listed in cell G36.

V. Conclusion

Cal Advocates requests that the Energy Division incorporate the recommendations herein to the SOD Calibration Tool. Please contact Kyle Navis with any questions or comments at kyle.navis@cpuc.ca.gov.

CALIFORNIA COMMUNITY CHOICE ASSOCIATION
INFORMAL COMMENTS ON THE SLICE OF DAY PLANNING RESERVE MARGIN CALIBRATION TOOL AND THERMAL AMBIENT DERATES WORKSHOP
October 25, 2023

I. INTRODUCTION

The California Community Choice Association[1] (CalCCA) appreciates the opportunity to comment on the Slice of Day (SOD) Planning Reserve Margin (PRM) Calibration Tool and Thermal Ambient Derates workshop (Workshop) held on October 25, 2023, and the presentation: *Resource Adequacy Slide of Day Translation Tool and Update to Thermal Derate Model.*[2]

CalCCA offers the following recommendations in the comments below:

- After incorporating parties' informal comments into the SOD PRM Calibration Tool, the Commission should use the updated tool to develop a draft PRM and effective PRM calibrated for SOD for the 2025 Resource Adequacy (RA) year and provide it to stakeholders with the February 1, 2024 report ordered in D.23-04-010[3] for their review and comment;
- To calibrate the effective PRM, Energy Division should use the same methodology it uses for the PRM; and
- The Commission should provide increased transparency about what is procured by the investor-owned utilities (IOU) for the effective PRM so that stakeholders have a better understanding of what portion of the RA supply stack was used for the effective PRM and whether those resources could have otherwise served to meet LSE compliance obligations.

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[1] California Community Choice Association represents the interests of 24 community choice electricity providers in California: Apple Valley Choice Energy, Ava Community Energy, Central Coast Community Energy, Clean Energy Alliance, Clean Power Alliance, CleanPowerSF, Desert Community Energy, Energy For Palmdale's Independent Choice, Lancaster Energy, Marin Clean Energy, Orange County Power Authority, Peninsula Clean Energy, Pico Rivera Innovative Municipal Energy, Pioneer Community Energy, Pomona Choice Energy, Rancho Mirage Energy Authority, Redwood Coast Energy Authority, San Diego Community Power, San Jacinto Power, San José Clean Energy, Santa Barbara Clean Energy, Silicon Valley Clean Energy, Sonoma Clean Power, and Valley Clean Energy.

[2] *Resource Adequacy Slide of Day Translation Tool and Update to Thermal Derate Model*, Energy Division, October 25, 2023: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/resource-adequacy-homepage/resource-adequacy-compliance-materials/resource-adequacy-history/r2310011sodtranslationtoolthermalderatemodel.pdf.

[3] Decision (D.) 23-04-010, *Decision on Phase 2 of the Resource Adequacy Reform Track*, R.21-10-002 (Apr. 6, 2023) at O¶ 19: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M505/K753/505753716.PDF.

II. COMMENTS

Energy Division presented the results of the SOD translation tool using inputs from the February 2023 and October 2023 loss of load expectation (LOLE) studies. Using the February 2023 inputs, the SOD PRM was 6.2 percent. Using the October 2023 inputs, the SOD PRM was 7.3 percent. During the Workshop, Energy Division identified a potential error in the tool and parties asked a series of questions on the methodology used to translate the PRM, especially around the assumptions used for energy storage. Energy Division indicated that following the Workshop, it would send load-serving entities (LSE) revised templates to use in their November test year filings using the updated SOD translation tool revised to fix any errors and incorporate stakeholder feedback as necessary.

After incorporating parties' Workshop feedback and informal comments into the SOD PRM Calibration Tool, the California Public Utilities Commission (Commission) should use the updated tool to develop a draft PRM and effective PRM calibrated for SOD for the 2025 RA year with an opportunity for stakeholder review and comments. The Commission should include this draft PRM and effective PRM calibration in the February 1, 2024 report ordered in D.23-04-010. Energy Division should then make any necessary adjustments based upon stakeholder feedback early in 2024. The Commission should aim to provide the 2025 PRM and effective PRM as early as possible in 2024 so that LSEs have certainty about their requirements for the first SOD compliance year. While the development of the PRM translations and LSE templates has necessarily been an iterative process leading up to the test year, LSEs require certainty leading up to the first compliance year around the tools they will use to demonstrate compliance and the PRM they will need to meet.

To calibrate the effective PRM, Energy Division should use the same methodology it uses for the PRM. D.23-06-029[4] adopted a 17 percent PRM and a 1,700 to 3,200 megawatts (MW) effective PRM for RA year 2024 and 2025. While the effective PRM was based on a MW target rather than a percentage, the Decision indicates that the effective PRM target MW range translated to a percentage of roughly 4-6.5 percent.[5] It should be noted that the effective PRM may be less under SOD on a percentage basis than it is under the current RA structure. This is due to the fact that resource counting is more accurate to the anticipated output of the resource thus eliminating the counting of resources in RA Net Qualifying Capacity in hours in which they are not expected to produce any output. The Commission should release the draft effective PRM along with the draft PRM in the February 1, 2024 report.

The February 1, 2024 report should also be accompanied by a proposal for increased transparency about what is procured by the IOUs for the effective PRM so that stakeholders have a better understanding of what portion of the RA supply stack was used for the effective PRM and whether those resources could have otherwise served to meet LSE compliance obligations. This should include by resource ID[6] if applicable (or the intertie for a non-resource specific import) the product purchased, the duration of the contract, the quantity purchased, when the contract began negotiation, and the date it was entered into. All of this data will help inform LSEs about the types

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[4] D.23-06-029, *Decision Adopting Local Capacity Obligations for 2024-2026, Flexible Capacity Obligations for 2024 and Program Refinements*, R.21-10-002 (June 29, 2023): https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M513/K132/513132432.PDF.

[5] *Id.* at 24-25.

[6] Resource ID is defined in CAISO Tariff Section Appendix A: https://www.caiso.com/Documents/AppendixA-MasterDefinitionSupplement-asof-Nov1-2023.pdf.

and quantities of resources and whether the effective PRM contracts of the IOUs impacted the ability of other LSEs to meet minimum compliance obligations.

IV. CONCLUSION

CalCCA appreciates the opportunity to comment on the *Resource Adequacy Slice of Day Translation Tool and Update to Thermal Derate Model* and urges the Commission to consider the recommendations herein.

Date: November 13, 2023

(*Original signed by*)

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Calpine Corporation's Informal Comments on the Resource Adequacy Slice of Day Translation Tool and Update to Thermal Derate Model Workshop
November 13, 2023
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Calpine appreciates the opportunity to comment on the Resource Adequacy Slice of Day Translation Tool and Update to Thermal Derate Model workshop. Calpine shares the view expressed by many at the October 25th workshop that the CPUC's approach to calculating a slice-of-day (SoD) PRM based on the tightest month may yield a PRM that is too low to ensure reliability on an annual basis. The CPUC's proposed approach establishes a portfolio that yields a 1-in-10 LOLE on an annual basis using SERVM. The approach translates this portfolio into SoD counting terms for the 24-hourly slices of September. The PRM is then calculated as the highest PRM in any of the hours (relative to the worst day load forecast that is the basis for SoD requirements). The problem with this approach is that when applied to other months, it is unlikely to lead to procurement of a portfolio that yields 1-in-10 on an annual basis. As discussed at the workshop, this problem was illustrated in an analysis that Astrape shared at an October 2022 workshop.[1] To address this problem, Calpine recommends an approach similar to the one summarized in the October workshop presentation, i.e., the CPUC should:

1) Start with a PRM derived from the CPUC's proposed translation approach for September or another month;
2) Identify monthly portfolios that meet the SoD requirements implied by that PRM;
3) Test that those 12 monthly portfolios in combination yield 1-in-10 LOLE on an annual basis in SERVM;
4) If step 3 fails, repeat steps 2 and 3 with a higher PRM.

The monthly portfolios could be constructed similarly to the way the CPUC is constructing the annual portfolio that is the basis for its translation, i.e., solar and batteries could be subtracted from an annual portfolio to yield portfolios that are consistent with a proposed SoD PRM for each month.

Based on comments at the workshop, Calpine is concerned that the CPUC plans to produce 12 monthly versions of its translation tool simply by translating a reliable full annual portfolio to SoD terms. While this exercise may produce some additional information, it will not be sufficient to yield an appropriate SoD PRM because it inherently cannot identify exactly what fraction of the full annual reliable portfolio is needed in different months to hit the annual reliability target, e.g., a finding that the full annual reliable portfolio yields a 30% PRM in April will not establish that a 30% PRM is needed in April or across the whole year.

Calpine also shares other parties' concerns about the arithmetic error that led to the exclusion of some wind resources from the PRM as well as the treatment of storage in the derivation of the SoD PRM. For the purposes of the calibration, storage should be treated as maximally available during the tightest hour (as long as this treatment does not result in shifting the tightest hour to another hour). For 4-hour

[1] See slides 5-12 of https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/resource-adequacy-homepage/resource-adequacy-compliance-materials/resource-adequacy-history/10-6-2022-wrap-up/workshop-10_energy-division_221006.pdf, which, among other things, suggest that the approach that the CPUC is now proposing could yield annual LOLE 4x the 1-in-10 LOLE target.

storage, this treatment should increase its contribution to the PRM by the difference in the availability currently assumed in the calibration, i.e., by 20% in cases where storage was spread over 5 hours.[2]

Calpine strongly encourages the CPUC to derive an accurate SoD PRM that demonstrably yields 1-in-10 annual reliability as a precondition of binding SoD implementation for the 2025 RA year, if not for the test year.

[2] It is Calpine's understanding that, in the current translation tool, a 100 MW, 4-hour battery often counts as 80 MW for five hours, i.e., the battery's 400 MWh of energy are spread over 5 hours. Calpine believes that the battery should be assigned at its full 100 MW to the four tightest hours, subject to the constraint that this approach does not artificially make other hours tighter. This approach is likely to increase the PRMs calculated for the tightest hours and ultimately the single PRM derived from the tool.

MRP Informal Comments on the October 25, 2023 Workshop on Slice-of-Day ("SoD") Calibration Tool, PRM Calculation and Thermal Derate Model

SoD

Middle River Power LLC ("MRP") appreciates Energy Division ("ED") Staff's efforts in holding the workshop to provide an opportunity for parties to review and understand the process of converting a planning reserve margin ("PRM") that would apply to the annual SoD RA Framework. Unfortunately, MRP believes the workshop fell short of that goal and Energy Division and parties have additional work to do.

First, two significant errors that impact the PRM calculation were found on the SoD PRM tool. Energy Division should publish the corrected SoD PRM tool on its website. The first error is the exclusion of the last row of wind resources which would bring the PRM from 6.2% to 8.2%. The second error relates to the usage of storage resources. The available storage energy should neither incorporate the efficiency losses of the discharge nor discharge the BESS resource over a five-hour period. Storage resources are capable of discharging at the Pmax but requires additional duration to charge. This should be captured in the charging component. Incorporating the efficiency on the discharging side would undercount the amount of capacity that would be shown. Both errors should be corrected as soon as possible.

Second, MRP requests Energy Division staff ("ED") schedule additional workshops so parties can continue to work on the conversion with ED staff. ED staff only performed the PRM conversion for one month and elected to apply the resulting PRM to the full SOD test year. MRP believes that this is an inaccurate application and should be further reviewed. As discussed in previous PRM workshops in November 2022, Energy Division presented analysis conducted by Astrape that indicated that simply setting the annual PRM to the September PRM quadrupled to LOLE from 0.1 to 0.4 (the so-called "Stress Test 1").[1] Without further analysis to confirm or refute the use of a single-month PRM for an entire year, MRP fears that similar results could occur.

Third, on-the-fly analysis conducted during the workshop seemed to suggest that, of the 2.2 GW of PCAP that was added to achieve a 0.1 LOLE, approximately 1.9 GW of PCAP came from batteries and approximately 400 MW of PCAP came from solar resources. It's still not clear how much nameplate capacity was added to yield this 2.2 GW of PCAP, and Energy Division should provide those amounts. MRP also requests that Energy Division publish any workpapers that Energy Division used in preparing the SoD PRM to allow party review. The workpapers should include the resource portfolio and the respective hourly NQC values and nameplate capacity associated with those NQC values.

Finally, the most recent email from ED staff indicates that staff has performed additional work behind the scenes and expects to release additional templates and PRM values by November 16th. While MRP agrees with and supports the effort to inform LSEs of the test year SoD PRM, the opaque process so far has not provided the necessary information for all parties to understand whether such results are accurate. MRP urgently requests ED staff hold additional workshops as soon as possible. Improperly setting the annual SoD PRM for the SoD test year will result in an erroneous compliance evaluation.

[1] See Energy Division October 6, 2022 Presentation *Slice of Day –Load Forecast Process Update and Loss of Load Studies Translation for RA proceeding Update* at slide 10.

MRP Informal Comments on the October 25, 2023 Workshop on Slice-of-Day ("SoD") Calibration Tool, PRM Calculation and Thermal Derate Model

Thermal Derate Model ("TDM")

MRP understands the primary improvement to the TDM over last year's TDM is to add Boolean variables that associate certain weather stations with certain resources. MRP appreciates that this added precision results in thermal derates that are significantly smaller than those obtained from the prior year's TDM, as shown in the table of median derated capacities from slide 40:

	Original	Revised
Combustion Turbine	95.77%	98.15%
Combined Cycle	96.18%	98.70%

Nevertheless, MRP observes that the analysis still relies exclusively on temperature as the independent variable to set QC values. As MRP previously observed, while temperature is a key derating indicator, it is not the sole indicator. The use of inlet cooling also affects unit performance, though the use of inlet cooling is not included as an independent variable in the regression analysis. Because inlet cooling does not apply to all thermal resource types, MRP recommends the ED staff create different thermal derating values based on different technology types, similar to solar fixed axis or tracking categories used to calculate the exceedance profiles. These categorizations would help differentiate thermal resources.

Additionally, assuming that ED intends to use the thermal derating methodology to set resource QC values, thermal derating proposals should not yield a single flat annual value but values that reflect the monthly nature of the RA program.

Pacific Gas and Electric Company's Informal Comments on
Energy Division's Slice of Day Planning Reserve Margin Calibration Tool
November 13, 2023

Pacific Gas and Electric Company ("PG&E") provides the following informal comments on Energy Division's Slice of Day ("SoD") Planning Reserve Margin ("PRM") Calibration Tool.

I. PG&E COMMENTS

A. Storage Optimization

During the workshop, held on 10/25, SCE and Nick Pappas raised concerns with the way storage is optimized in the model, arguing that correcting this issue is critical to getting a reasonable PRM result for the SoD framework. PG&E understands that both parties have made modifications to the tool to support better storage optimization. PG&E urges Energy Division to work with these parties to update the functionality of the tool to better optimize storage. PG&E is concerned that the current PRM result may be too low due to the shortcomings in the storage optimization, which could threaten reliability if the shortcomings aren't addressed.

B. Other issues to be addressed in the PRM Calibration Tool:

- Existing tool does not capture SoCal Wind: this issue was identified in the workshop, but PG&E is identifying it in informal comments to ensure it is fixed.
- Storage capacity: storage capacity appears to be derated for losses, although losses occur on the charging side, not the dispatch side (see "storage" tab of the model where "Total Energy" appears to be derated for losses relative to "Pndcap"). If this is not corrected, the model will show less overall available capacity than exists on the grid.
- Analysis only performed for September: Several stakeholders raised concerns with the fact that the PRM analysis was only completed for September and no other months. PG&E recommends modeling other critical summer months like June, July, August at a minimum to see if the September PRM would result in a reliable system if applied to those months as well.

C. Ambient Derates

Energy Division presented a revised ambient derate analysis at the 10/25 workshop. While this analysis

appears to be an improvement over Energy Division's initial ambient derate analysis that was released earlier this year (e.g. it uses a multilinear regression approach instead of a single regression), neither analysis included a benchmarking against real-world data. PG&E recommends undergoing a benchmarking process as the next step for this work to ensure that the proposed derates are reflective of real-world results. For instance, discussion during the workshop indicated that the analysis aggregates the value over the entire month, while actual performance during the most stressed periods is likely a larger derate than the value captured in the analysis, which raises the question of what level of data aggregation is reasonable.