**CDR MODIFICATION PLAN, VERSION 2**

| **Item No.** | **Initiative Name** | **Description** | **Dependencies** | **Comments** |
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| 1 | Quarterly Release | Post CDR reports on a quarterly basis that provide resource adequacy summaries as of the start of each future season (spring, summer, fall, winter) going out five years. | * Will require a NPRR with dependency on a PUC rulemaking.
* CDR preparation tools will require more automated data processing features.
* Completion of all RIOO-RS system functionality/change requests.
* Coordination with the Load Forecasting & Analysis Dept. on changing the timing and frequency of the Long Term Load Forecast.
 | * Received approval for a new FTE position to support increased report frequency and scope, and started the recruiting process.
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| 2 | Separate Main and Data Reports | Reconstitute the CDR into a main report in PowerPoint that features charts, tables, highlight text, and a link to the supporting data report. The data report consists of a dynamic dashboard using the *Tableau Public* data visualization platform, with access to detailed data tables. | * A CDR design overhaul would not require an NPRR. Protocol Section 3.2.6.2(1) states that the “format and content of this report shall be developed by ERCOT, and subject to TAC approval.”
 | * Started preparing an early demo product for internal review.
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| 3 | Resource Adequacy Scorecard | The main report includes a resource adequacy scorecard that shows how the forecasted resource portfolio performs on a range of forward-looking measures. Examples include:* Capacity Reserve Margin relative to EORM, MERM, and reliability-based levels.
* Energy adequacy measures, such as (1) seasonal Expected Unserved Energy (EUE) as a percentage of total energy relative to a standards-based level, (2) EUE depth, a measure of the magnitude of EUE relative to a “severe emergency event” threshold.
* Extreme net load risk measures for both capacity and energy. Examples of capacity measures include resource capacity margins needed to cover an extreme seasonal net load ramp and a worst-case net load scenario. An example of an energy measure is the Expected Unserved Ramp (EUR) for given periods.
 | * PUC rulemaking and approval of the scorecard approach.
 | * EUE measures would entail running the SERVM model on a yet-to-be-determined frequency.
* Expected Unserved Ramp (EUR) would entail running a tool suite: Aurora, SFLEX and InFLEXion. Aurora produces unit commitment & dispatch results for the evaluation period. SFLEX creates synthetic five-minute wind, solar and load profiles using original one-hour profiles. InFLEXion performs the flexibility evaluation and produces the flexibility deficit measure values.
* Examples of net load risk screening measures are provided in the following SAWG presentation:

<https://www.ercot.com/files/docs/2022/08/29/3__Dispatchable-Flexible_Resource_Adequacy_Measures_.pptx> |
| 4 | ELCC/UCAP | Switch to Effective Load Carrying Capability (ELCC) values for inverter-based resources (wind, solar, energy storage). Switch to Unforced Capacity (UCAP) values for thermal resources, which involves lowering the seasonal sustained capacity ratings based on actual forced outage rates. | * PUC rulemaking and rule language pertaining to capacity accreditation.
* Completion of the current ELCC study and formal approval of the ELCC methodology and estimation process.
* Selection of a UCAP methodology. For example:
	+ EFORd – “technology class” derates based on the seasonal Expected Forced Outage Rate when the capacity is in demand.
	+ EFORp - The EFOR during pre-defined hours. (See item 5 for context.)
* Requires an NPRR.
 | * Astrape Consulting advocates E3’s *Delta* method for ELCC estimation. This method is based on a modified portfolio ELCC approach that allocates the marginal diversity benefits of technology-type MW blocks as a function of the timing when the blocks are added to the system (first-in versus last-in).
* Need to consider the relative impacts of adopting annual, monthly or hour-specific ELCC values (if feasible).
* Need to consider a UCAP adjustment for extreme weather event risk, as well as the prospective impact of winter preparedness efforts.
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| 5 | Reporting of Reserve Margins for Multiple Hours | Report Reserve Margins for selected hours for each season that have the highest net load risks.  | * PUC rulemaking and approval of the multi-hour reporting approach.
* Completion of the current ELCC study and evaluation of hour-specific ELCC estimation (see comments).
 | * Propose reporting for hour-ending 3 pm, 5 pm and 7 pm for the spring, summer and fall seasons. For the winter season, report for HE 8 am, 3 pm, 5 pm and 7 pm.
* If hourly ELCC values are not feasible, rely on the existing Capacity Contribution Estimation Tool, which has calculation settings for estimating capacity contributions based on the highest net load hours.
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| 6 | Reserve Margin Scenarios | For risk assessment purposes, include scenarios with different Reserve Margin outcomes. Scenario assumption examples include the following:* Use alternative load forecasts.
* Modify the forecasted planned resource capacity based on different sets of eligibility criteria.
* Incorporate the capacity impacts of Unconfirmed Retirements as defined in the current CDR reports.
 | Incorporation of RM scenarios may not need an NPRR unless a requirement is included in a PUC rulemaking. | * Recommend allowing ERCOT the flexibility to define RM scenarios based on emerging needs.
* One-time events such as exceptional winter storms or summer droughts would be treated as scenarios in the SARAs rather than CDRs.
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| 7 | Modify CDR Inclusion Eligibility Criteria for Planned Projects | Add an additional criterion for including planned capacity in the CDR: Receipt of a TSP written notice from the Interconnecting Entity that the IE has provided a notice to proceed with the interconnection facility construction and has proof of financial security to fund the facility construction.  | Requires an NPRR. | * This change will reduce planned capacity overestimation, especially in the near term, and better align CDR criteria with those used for including resources in the transmission planning models.
* See Planning Guide Section 6.9(1)(d)(i) and 6.9(1)(d)(ii).
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| 8 | Include Unconfirmed Retirements in Reserve Margins | Include Unconfirmed Retirement capacity as a resource line item that impacts the CDR Reserve Margin and other measures. | * Requires an NPRR.
* This proposal has not yet been vetted with Market Participants or the PUC.
 | An "Unconfirmed Retirement" is defined as a generation unit for which a public announcement of the intent to permanently shut the unit down has been released, but a Notice of Suspension of Operations for the unit has not been received by ERCOT. The criteria for listing a unit as an Unconfirmed Retirement include the following: a. A specific retirement date is cited in the announcement, or other timing information is given that indicates the unit will be unavailable as of the start of a given CDR season. b. The announcement, with follow-up inquiry by ERCOT, does not indicate that retirement timing is highly speculative. |
| 9 | Multiple Solar Regions | Develop two or three Solar Regions for ELCC estimation and geographical reporting (e.g., Far West, West and non-West). | Requires an NPRR. | An ERCOT staff presentation on alternative Solar Region definitions was given at the 5/18/2021 SAWG meeting. |
| 10 | LFL Reporting | Incorporate Large Flexible Load information in the CDR per the LFL white paper approved by the LFL Task Force (Issue number LFL-49). | * Requires TAC endorsement and an NPRR.
* LFL classification and reporting processes at ERCOT (such as interconnection and registration) need to be defined and implemented.

Methodologies for forecasting the penetration of both co-located and standalone LFL capacity need to be developed and implemented. | * The resource adequacy LFL white paper is available at: [https://www.ercot.com/files/docs/2022/08/17/LFLs%20and%20Resource%20Adequacy%20White%20Paper%20(Draft).doc](https://www.ercot.com/files/docs/2022/08/17/LFLs%20and%20Resource%20Adequacy%20White%20Paper%20%28Draft%29.doc)
* Note that the white paper assumes the current structure of the CDR report; an NPRR may reflect changes to the reporting format based on the CDR redesign.
* The LFLTF is considering alternative large load definitions.
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| 11 | Report Total Unregistered DG | Include a new demand adjustment line item for Unregistered Distributed Generation (principally rooftop solar). Unregistered DG is accounted for in the Long-Term Load Forecast, and there is an Unregistered DG report that captures most of the capacity. This initiative is intended to consolidate and expand the reported capacity amounts.  | * May need NPRR language that addresses DG forecasting if stakeholders want that formally included in the CDR.
* Requires NPRR language to remove the facility reporting size threshold in the Unregistered DG report, or establish another data collection mechanism in lieu of the one used for the Unregistered DG report (load profile submissions from competitive areas, and Excel form submissions from NOIEs.
 | * preliminary draft NPRR was prepared and presented to SAWG in May 2021).
* ERCOT currently develops alternative rooftop solar penetration forecasts based on a sigmoid “S-curve” technology adoption model. These results are not used in the CDR, but are reported to NERC for their Long-Term Reliability Assessment and used as scenario assumptions in the LTSA modeling. ERCOT has also been investigating the use of the dGen model, which was developed by the National Renewable Energy Lab.
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| 12 | Capacity contribution for fossil fueled SODGs | Assign a capacity contribution for fossil fueled Settlement Only Distributed Generators (SODGs). These SODGs are currently identified in the CDR report, but are not included in the Reserve Margin calculation. | Requires an NPRR (preliminary draft NPRR was prepared and presented to SAWG in May 2021). | ERCOT summarized the complications for estimating fossil fueled SODG capacity contributions at the 2/20/2020 SAWG meeting. |
| 13 | DG breakout of ERS Generator and Load capacity | Divide the current single “Emergency Response Service” capacity line item into two items distinguishing capacity associated with Distributed Generators and Load Resources. | May require an NPRR. | The ERCOT Demand Integration Department has developed an internal report that identifies procured ERS capacity for ERS sites with Settlement-Only Distributed Generators (SODGs). |