**Load Types & Characteristics Matrix**

*DRAFT – August 15, 2022*

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|  | Load Resources  (Providing Energy and/or AS via DR; Registered) | |  | Large Flexible Load  =>75 MW or  => 20 MW (if co-located) | |  |
| CLR | NCLR | ERS Load | SCED Flexible Load  (LFL-4) | Interruptible Load  ~(LFL-5) | Transmission Firm Load |
| Characteristic | Loads meeting the size limitations and capable of controllably reducing or increasing consumption via SCED dispatch with new Base Points delivered every SCED Run (talk of SCED being process as 1 minute execution) | If providing RRS must be  Controlled by high-set UFRs @ 59.70 Hz and  must be able to interrupt within 30 cycles.  May be deployed with 10 or 30 minute notice.  Must return to service withing 3 hours following ERCOT deployment, | Any load capable of interruption prior to EEA on instruction from ERCOT  A load, or aggregation of loads, contracted to provide ERS  May be deployed with 10 or 30 minute notice.  Must return to service withing 3 hours  following ERCOT deployment,  Must maintain 95% Availability factor. | The portion of a Large Load that has bids and offers in SCED  Nodal vs Zonal Shift Factor and Pricing to be determined | Large Load capable of interruption prior to EEA on instruction from ERCOT  Blocky  Response time = x minutes or less  Duration time > y minutes  Customer expected to passively interrupt before ERCOT reserves drop below the MCL.  ERCOT shall instruct customer to go off-line when reserves reach the MCL | Firm Load  may passively respond to ERCOT prices |

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| Registration | Voluntarily registers with ERCOT as a Load Resource | Voluntarily registers with ERCOT as a Load Resource | Voluntarily Registers with ERCOT to provide ERS | New-Voluntary Registration with ERCOT as a SCED resource and agrees to meet the requirements of the ERCOT Protocols | New-Voluntary Registration with ERCOT is required as an Interruptible Load and agrees to meet the requirements of the ERCOT Protocols | Not required to register with ERCOT |
| Services | Energy Dispatch by SCED, and AS:  RRS Reg-Up  Reg-Down  Non-Spin  If providing Non-Spin, energy bid in real time must not be greater than $xxx per MW. ?? | -RRS (today)  -Non Spin (soon)  -ECRS (2023)  If providing Non-Spin or ECRS, energy bid in real time must not be greater than $xxx per MW?? | Only dispatched by an Instruction from ERCOT operators. | Not allowed to provide any Ancillary Service.  Must agree to limit its bids in SCED for energy to no more than SWOC | Non-Compensated Service | Not allowed to provide an Ancillary Service |
| Qualification | -Capable of following SCED or LFC BPs  -Must have frequency response -Qualified via testing to provide AS  -Pass unannounced testing  -Annual telemetry validation | -Must have UFR set to trip @ 59.7 Hz to provide RRS  Must have un-armed UFR if providing Non-Spin -Qualified via testing to provide AS  -Pass unannounced testing  -Annual telemetry validation |  | Ability to follow SCED base points | Must meet qualification for an interruptible load | No qualification |
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| Control Method | -Manual Response (someone at facility takes action), or QSE administers action via remote control or signal  Will be controlled precisely for local transmission problems via SCED or other control methods | If providing RRS, Pre-set/pre-programmed to respond only to specific frequency trigger; must be reset if not awarded RRS in DAM | ERCOT calls for ERS, and load responds in 10 minutes or 30 minutes  -manual responses, or QSE with remote control | Same as CLR.  Will also be interruptible for local transmission problems via SCED or other control methods | Interruption manually controlled by consumer on instruction from ERCOT.  Need to determine the amount of system reserve when ERCOT operators should call for an interruption. How do we create parity between different providers?  Will also be interruptible for local transmission problems |  |

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| Ramp Rate | Must comply with SCED requirement  specified in Registration and continuous telemetry  Level Change occurs during first 4 minutes of SCED dispatch  Subject to Base Point deviation charge  {Should column CLR and SCED Flexible be the same? No, not necessarily, as SCED may only be the trigger for an interruption of an individual LFL  Depends on final design. | As required by the specific ancillary service being provided. |  | Must comply with SCED requirements  As specified in Registration and continuous telemetry  Capable of 10-minute ramp from full registered load to minimum registered load and  10-minute Ramp from minimum registered load to maximum registered Load  Restoration of load to normal will be by Dispatch Instruction. | TBD expect it to be between 5 and 30 Minutes to interrupt.  Final design will include a method to group individual loads to manage overall ramp changes to avoid interrupting load at a rate that would cause excess system frequency problems.  Restoration of load to normal will be by Dispatch Instruction. |  |

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| Energy Settlements | Proposed by PUC to be Settled at Nodal Price | Settled at weighted average of all LMPs within a Load Zone every 15 minutes | Settled at weighted average of all LMPs within a Load Zone every 15 minutes | According to PUCT rule 25.501 | Settled at load weighted average of all LMPs within a Load Zone every 15 minutes | Settled at load weighted average of all LMPs within a Load Zone every 15 minutes |
| Capacity Settlements | Settled at Day Ahead Market price for the hour awarded AS | Settled at Day Ahead Market price for the hour awarded AS | As specified in ERS program | Settled at Day Ahead Market price for the hour awarded AS | None | None |
| How often can they be used for DR? | no limit | No limit; If providing RRS must be able to return to service within x hours of deployment | Certain # of times in their contract unless extended by ERCOT | No limit | No limit | Only subject to responding to ERCOT requests for voluntary load conservation |
| Registration and Participation required | Yes, if available and providing Ancillary Services and participating in SCED as a Load Resource -Must submit bid to buy into SCED to provide the service or potentially be held as withholding | Yes, if available and providing Ancillary Services | Yes if awarded ERS | Yes.  Must participate in SCED as a Load  Must submit bid to buy into SCED to provide the service or potentially be held as withholding | Yes. | Not required and not available for expedited interconnection to the ERCOT system |
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| Re-dispatch studies | ?? | Cannot be re-dispatched in real time |  | Can be studied using Real time redispatch and limited according to needed reliability standards | Only re-dispatched for capacity in studies. | Not  considered |
| CDR-SARA | The Large Flexible load portion of the portfolio of CLRs treated as non-firm. Other CLRs treated as firm. | Treated as an Interruptible Resource, but typically limited to no more than allowed in Day Ahead markets |  | The Large Flexible load aggregate portfolio dispatched by SCED is treated as non-firm load  according to the ERCOT white paper “Large Flexible Loads and Resource Adequacy Reporting” | The Large Flexible load aggregate portfolio dispatched by ERCOT operations Dispatch Instruction prior to reaching MCL is treated as non-firm load  according to the ERCOT white paper “Large Flexible Loads and Resource Adequacy Reporting”. | Included in Firm Load to be served |