Appendix K. Tuned system ELCCs

This appendix provides tuned system ELCC values using the IRPs Preferred Portfolios. Tuned ELCC values are calculated in a model that is resource adequate or close to resource adequate. They provide an estimate of the resource's ELCC value when viewed as part of a complete system. Untuned values, which are used in this IRP for portfolio creation, are tested on a resource deficit system. Additional discussion on tuned vs. untuned ELCCs is available in the previous appendix.

K.1 Tuned system ELCCs

Annual tuned effective load carrying capability (ELCC) values are provided in line with the preferred practices recommended by the Oregon Public Utility Commission (OPUC) via the UM 2011 docket and to comply with LC 73 requirements.[492] The UM 2011best practices document applies "when calculating the capacity contribution of a supply or demand side resource, generally whenever a specific resource or resource type and not a portfolio of resources is being considered (incremental vs portfolio capacity analysis). This currently includes some aspects of regulatory purposes such as administrative pricing, cost effectiveness and customer program design, resource adequacy analysis, planning (IRP & DSP), and procurement (RFP)."[493]

The ELCC values in this section are calculated using a tuned system and at an annual level.[494] The tuned system includes IRP Preferred Portfolio resources and is adjusted by either adding or removing resources until the system deficit is around 70 to 100 MW.[495] The tunning is performed by adjusting up or down the level of perfect capacity resources in the portfolio (other resource types, like wind, solar, or battery, are not adjusted). After system tunning the ELCC studies run using the steps described in **Appendix J, ELCC sensitivities**. These values are not directly comparable to ELCC values used for portfolio creation in the IRP. The

[492] The LC 73 requirement is on page one of appendix A at: https://apps.puc.state.or.us/orders/2021ords/21-129.pdf The UM 2011 practices are here: https://apps.puc.state.or.us/orders/2022ords/22-468.pdf

[493] *Id.*

[494] For general information on resource ELCCs in this IRP, see **Chapter 10, Resource economics, Appendix J**, **ELCC sensitivities**, and for information on the Sequoia model, see **Appendix H, 2023 IRP modeling details**.

[495] If deficits become too low some resources, like hybrids, may solve all the outage hours required to return the system to an adequate state and thus not receive an accurate ELCC estimate. If the deficit is too high this negates the advantage of testing in a tuned system, which is examining how the resource behaves in a plausible future portfolio. The 70 to 100 MW range provides headroom for testing ELCCs of 100 MW increments of resource while staying inside a relatively adequate system. More discussion on why a tuned portfolio is used can be found in the best practices report: https://apps.puc.state.or.us/orders/2022ords/22-468.pdf

portfolio creation values are calculated in an untuned system and on a seasonal (as opposed to annual) basis.

The results are for 100 MW of supply side resource available in the Action Plan period from 2026 through 2043. ELCC values are calculated in year 2026, 2031, 2036, and 2043, with the years between linearly interpolated.[496] For reference, the average ELCC value from 2026 to 2043 is also included.

[496] This method comes from UM 2011 recommended best practices. "At a minimum, the IRP index of proxy resources must include at least four ELCC modeling year resource capacity contribution values. Unless otherwise warranted, the first ELCC modeling year shall be the first year where a major resource need is identified, and the last ELCC modelling year shall be the last year of the study period. The other two modelling years shall be selected by the utility, after considering input from Staff and stakeholders. Years of the study period not directly modelled shall have the ELCC annual capacity contribution values derived through interpolation using a reasonable method given the findings if the ELCC modelling analysis."

Table 133. Tunned ELCC values by year

Resource	2026-2043 avg.	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Wind Gorge Firm	15%	22%	20%	18%	15%	13%	13%	13%	14%	14%	14%	14%	14%	14%	14%	13%	13%	13%	13%
Wind Gorge CF200	10%	17%	15%	13%	10%	8%	8%	8%	9%	9%	9%	9%	9%	9%	9%	8%	8%	8%	8%
Wind SE WA Firm	19%	20%	19%	18%	17%	16%	16%	16%	17%	17%	17%	17%	18%	19%	20%	21%	22%	23%	24%
Wind SE WA CF200	14%	13%	13%	13%	13%	13%	13%	13%	13%	12%	12%	12%	13%	14%	15%	16%	17%	18%	19%
Wind MT firm	31%	39%	37%	36%	34%	32%	31%	30%	29%	28%	27%	26%	27%	28%	29%	29%	30%	31%	32%
Wind MT CF200	22%	23%	23%	24%	24%	24%	23%	23%	22%	21%	21%	20%	20%	21%	21%	22%	22%	23%	23%
Solar CV Firm	7%	22%	18%	14%	9%	5%	5%	5%	5%	5%	5%	5%	5%	4%	4%	3%	3%	2%	2%
Solar CV CF200	3%	10%	8%	6%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%
Solar Wasco Firm	9%	22%	19%	16%	12%	9%	9%	8%	8%	7%	7%	6%	6%	6%	6%	6%	6%	6%	6%

Resource	2026-2043 avg.	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Solar Wasco F200	4%	9%	8%	6%	5%	3%	3%	3%	4%	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%
Solar MCMN Firm	10%	21%	19%	16%	14%	11%	11%	10%	10%	9%	9%	8%	8%	7%	7%	7%	7%	6%	6%
Solar MCMN CF200	4%	8%	7%	6%	5%	4%	4%	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	2%	2%
MCMN hybrid 1 Firm	67%	65%	66%	66%	67%	67%	67%	68%	68%	68%	69%	69%	68%	68%	67%	66%	65%	65%	64%
MCMN hybrid 2 Firm	39%	44%	43%	42%	41%	39%	39%	39%	39%	38%	38%	38%	38%	37%	37%	37%	37%	36%	36%
MCMN hybrid 1 CF200	53%	47%	48%	49%	50%	51%	52%	52%	53%	54%	54%	55%	55%	55%	55%	55%	55%	55%	55%
MCMN hybrid 2 CF200	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	29%	29%	29%	29%

Resource	2026-2043 avg.	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
CV hybrid 1 Firm	67%	64%	65%	66%	67%	68%	69%	69%	70%	70%	71%	71%	70%	69%	68%	66%	65%	64%	63%
CV hybrid 2 Firm	39%	46%	45%	44%	42%	41%	41%	40%	40%	39%	39%	38%	38%	37%	37%	36%	36%	35%	35%
CV hybrid 1 CF200	53%	46%	47%	49%	50%	51%	52%	53%	54%	55%	56%	57%	57%	56%	56%	56%	56%	55%	55%
CV hybrid 2 CF200	30%	28%	29%	30%	31%	32%	31%	31%	30%	29%	29%	28%	29%	29%	30%	30%	31%	31%	32%
Two hr. battery	31%	20%	23%	25%	28%	30%	31%	32%	34%	35%	36%	37%	36%	35%	34%	32%	31%	30%	29%
Four hr. battery	56%	39%	43%	47%	51%	55%	56%	58%	59%	60%	62%	63%	62%	61%	60%	60%	59%	58%	57%