Estimated Electrical Load required for the CMRR; prepared for use in the CMRR Supplement Analysis, 2010.

Reference/Sources

1 Best Guess Electrical Load Forecast Spreadsheet from Eugene Wagner March 25, 2010. (Shown below)
2 100320-E0CAL-00001 Rev C 11/23/2009 p 24/36
3 Meeting w/E. Wagner, S.. Hartnett, N. Sequin, 8/30/2010 to disscuss Electrical Loads

Estimate/Calcs

RLUOB Assume full power load during normal Working/Operations hours and 60% of full power load during non-working, operations hours. (Reference #3, Mtg with E. Wagner on 8/30/2010)

Full power load = 9081 KVA or 9.0 MW (reference: Design Load highlighted in spreadsheet below)	
Non working hours = 60% of 9.0 WM = 5.4 MW	5.4
Working Hours: Assumed 12 hrs/day * 260 days/yr = 3120 hours/yr.	3,120.0
Non working Hours: (365 days/yr * 24 hours/day) - 3120 hours/year (of working hours) = 5640 hours per year	5,640.0
Yearkly Load = (3120 hours/year * 9.0 MW) + (5640 hours/year * 5.4 WM) = 58,536 MW	58,536.0
RLUOB Operations Load = 58,536 MW per year	

NF Assume full pwer load 24/7, e.g. no change in load between operating and non-operating hours. (Based on meeting w/E. Wagner 8/30/2010,

Full power load = 11,693 KVA, or 11.7 MW (reference: #2, 100320-E0CAL-00001 Rev C 11/23/2009 p 24/36)	
Yearkly Load = (11.7 * 24 hours/day * 365 days/yr) = 102,492	102,492.0
NF Operations Load = 102,492MW per year	

Total Load RLUOB + NF

58,536 + 102,492 = 161,028 MW per year	161,028.00

Estimated Peak Demand

Peak load is 3750 MW per transformer (with fans running), as per Load Forecast spreadsheet below and per 8/302010 meeting with E. Wagner	
7 transformers (per meeting with E. Wagner) -- 3 for RLUOB, 4 for NF	
Total Peak Load = 7*3750 = 26,250 KVA = 26 MW	26.25

Best Guess - Load Forecast - CMRR

Best Guess is based on IFC drawings for RLUOB and VERY preliminary estimated for NF

By Eugene A. Wagner, III, P.E. (x 7-5225)
CMRR - Lead Electrical Engineer
November 2, 2009 Initial
March 25, 2010 Revised

	Design load	30% Load growth for 50 year design life	Estimated per year growth = 30% per yr / 50 yr	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021							
	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA							
RLUOB	NOTE: - The below load information is taken from RLUOB Issued For Construction drawings E 6000, E-6001, E-6005, and E-6012																						
SUS-A	2771	832	16.6	2771	2788	2804.3	2820.9	2837.6	2854.2	2870.8	2887.5	2904.1	2920.8	2937.4	2954.0	2970.7							
SUS-B	2984	895	17.9	2984	3002	3019.8	3037.7	3055.6	3073.5	3091.4	3109.3	3127.2	3145.1	3163.0	3180.9	3198.8							
SUS-C	3326	809	16.2	3326	3342	3358.4	3374.5	3390.7	3406.9	3423.1	3439.3	3455.4	3471.6	3487.8	3504.0	3520.2							
RLUOB - Total kVA	9081	2536	50.7	9081.0	9131.7	9182.4	9233.2	9283.9	9334.6	9385.3	9436.0	9486.8	9537.5	9588.2	9638.9	9689.6							
RLUOB - Total kVA		11617																					

NF	NOTE: - The expected transformer size for the NF power system is 2500 kVA / 3750 kVA (with fans running) Initial design load for each substation is calculated as 3750 kVA - 30% and final 50 year load as 3750 kVA per substation		Estimated per year growth = 3750 kVA - 2500 kVA / 50 Yr.								2016 - GUESS!	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
3750	kVA	kVA	kVA								kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA
SUS-A(NF)	2625	1125	22.5								2625	2648	2670.0	2692.5	2715.0	2737.5	2760.0	2782.5	2805.0	2827.5	2850.0	2872.5	2895.0
SUS-A(NF)	2625	1125	22.5								2625	2648	2670.0	2692.5	2715.0	2737.5	2760.0	2782.5	2805.0	2827.5	2850.0	2872.5	2895.0
SUS-C(NF)	2625	1125	22.5								2625	2648	2670.0	2692.5	2715.0	2737.5	2760.0	2782.5	2805.0	2827.5	2850.0	2872.5	2895.0
SUS-D(NF)	2625	1125	22.5								2625	2648	2670.0	2692.5	2715.0	2737.5	2760.0	2782.5	2805.0	2827.5	2850.0	2872.5	2895.0
NF - Total kVA	10500	4500	90.0								10500.0	10590.0	10680.0	10770.0	10860.0	10950.0	11040.0	11130.0	11220.0	11310.0	11400.0	11490.0	11580.0
NF - Total kVA		15000																					

Best Guess - Load Forecast - CMRR

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By Eugene A. Wagner, III, P.E. (x 7-5225)
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November 2, 2009 Initial
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	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA
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3750	kVA	kVA	kVA								kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA
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NF - Total kVA		15000																					

Notes from discussion with EAW & NS 3/26/2010

1000 kVA = 1 MW

RLUOB Energy Model:
Btu/yr MWh/yr 1 MWh = 3,410,000 BTU
18507000 5.427273

Use E19 at beneficial occupancy in Oct 2011 first year.
RLUOB Issued for construction drawings
1000 kVA = 1 MW

Use L30 as beneficial occupancy in 2022 first year
NF Interim Design II Transformer size estimates.
Design Basis - National Electric Code Design Code Calcs.

100320-E0CAL-00001 Rev C 11/23 Estimated Load of the facility under normal loading conditions is 11.693 MVA.

MVA	kVA	MWh
11.693	11693	11.693