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December 5, 2013

Mrs. Susan M. Hudson, Clerk
Vermont Public Service Board
People's United Bank Building, Fourth Floor
112 State Street, Drawer 20
Montpelier, Vermont 05620

RE: EEU-2013-01

Dear Ms Hudson:

In its order of 9/30/2013 in the above referenced Docket, the PSB requested recommendations on the concept of a QPI addressing average monthly coincident peak be filed by December 6.

In its comments of September 10, 2013, VELCO proposed addition of a QPI, "aimed at verifiable, sustained reductions in Vermont's *average monthly coincident peak* demand for each month of a June-May year". VELCO's comments are based on the effect of reduced allocations of ISO-NE on Vermont's RNS charges (which are based on Network Load ("NWL")). As VELCO notes, these charges are not insignificant and are forecasted to increase at a rate materially higher than inflation. BED would offer several comments on the value/use(s) of such a QPI, and if such a QPI is determined to be needed, on its calculation.

First, the potential savings cited by VELCO are real, but represent the result of allocations, among New England load serving entities, of already committed transmission investments. As BED has noted in other dockets, the current RNS costs, and probably much of the projected increase in these cost in the short term, are not avoidable. In fact any savings in current RNS charges would represent a "transfer payment" and would not change the societal screening of measures. Some change in RNS charges could appear in the screening tool as a "ratepayer benefit", subject to the comments below.

As mentioned by VELCO, such calculations only have validity to the extent that Vermont is the only entity pursuing such measures, or to the extent that Vermont is pursuing them disproportionately to the other states. In other words if all of the New England states



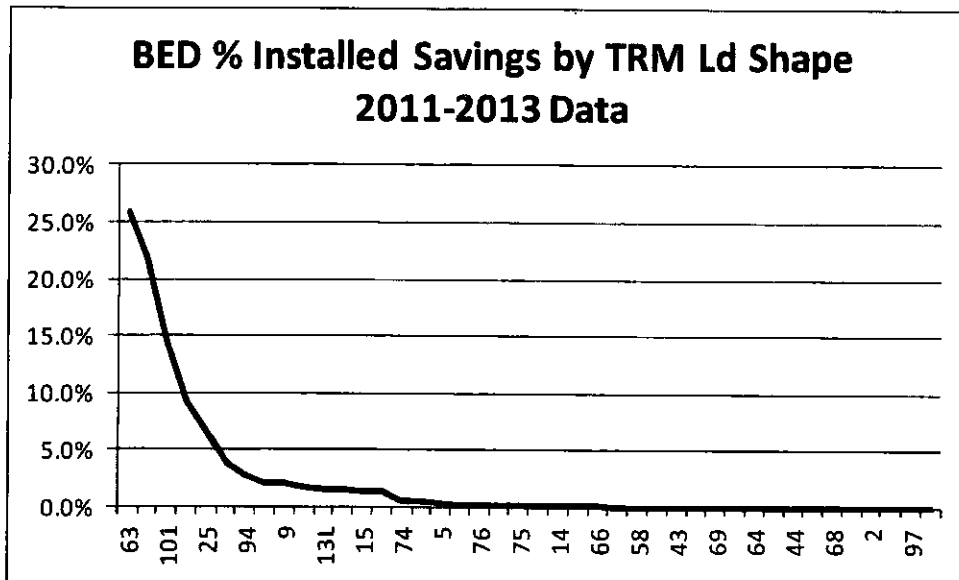
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were to realized a 5% savings in NWL, the RNS rates would increase by 5%, and there would in fact be no savings to any state from already committed investments. The primary benefit of investing in measures would be based on avoiding future transmission expenditures which are not embodied in the current and near term forecasted RNS rates. The question should be asked though, are future transmission investments driven by "*average monthly coincident peak*" loads or by some other value such as peak period loads (for example the average summer peak hour loads currently contained in the TRM – or the loads that would impact VELCO's 90/10 analyses). Also if we cite savings or direct activities based on the proposed QPI, without information on relative activities in other states and how energy efficiency savings are impacting the RNS rates they may be of limited utility and overstate the benefit.

As to the calculation of such a QPI, the data in the current TRM could in some cases be valuable and used as a proxy for *average monthly coincident peak* values, but in other cases a more detailed review (such as looking at hourly load shapes in comparison to VELCO peak hours) might be needed. For measures that have fairly flat load profiles (for example most commercial lighting) the current TRM winter and summer KW savings estimates (which are estimated average savings across the ISO-NE reliability hours) could be reasonable proxies for the contribution to Vermont's peak in most months. VELCO tends to peak during the reliability hours (or close to them) in most months.

However for some measures (such as air conditioning for example) the peak hour effect during the summer months would be materially higher than the average savings across the reliability period for the summer months which is currently shown in the TRM. If additional work either obtaining or developing hourly load shapes (if the load shapes underlying the TRM values are not available), is required, BED would suggest initially focusing on the measures that generate the largest savings or that would reasonably be expected to have peak period values materially different from the already available average period values. For BED at least, 5 TRMs (out of about 150 TRMS) generate almost 80% of the savings over the last 35 months (see graph below). It may not be reasonable /economical to develop the proposed QPI for all TRM loads.



Based on a *quick* pass through the TRMs, BED would add that less than ten of the TRMs, that Burlington has used in the last three years, seem likely to have monthly peak values that might be different from their average values (see shaded rows on attached table). For these measures, use of the Winter and Summer kW values to estimate the VELCO monthly peak savings might not be appropriate. None of these are in the top ten load shapes in terms of percent of savings installed, and many are small contributors to total savings. It is possible that simply estimating the VELCO monthly CP savings based on the data already in the TRM may be adequate. VEIC may have different results, and TRMs that are not relevant to BED, may be important elsewhere in Vermont though.

BED plans to attend the workshop on December 19th and looks forward to the opportunity for further discussion on this topic.

Sincerely,

Chris Burns, Director of Energy Services
James L. Gibbons, Director of Resource Planning

BED Savings 2011 to 12/2/2013

End Use	LoadShape	kwhWinOn	kwhWinOff	kwhSumOn	kwhSumOff	kwh	% of total kwh	kwWin (5 to 7 P.M. Dec & Jan)	% of total kwWin	kwSum (1 to 5 P.M. June - Aug)	% of total kwSum
Commercial Indoor Lighting with cooling bonus	63	1,988,336	710,010	1,148,288	412,914	4,259,546	25.9%	591	19.3%	952	40.5%
Residential Indoor Lighting	1	1,334,154	1,250,737	470,980	532,531	3,588,402	21.8%	1,166	38.0%	322	13.7%
Commercial EP Lighting	101	1,169,436	461,859	533,076	222,059	2,386,430	14.5%	344	11.2%	463	19.7%
Commercial Outdoor Lighting	13	319,793	766,291	97,211	341,085	1,524,379	9.3%	241	7.9%	12	0.5%
Flat (8760 hours)	25	348,574	379,297	175,191	187,699	1,090,762	6.6%	121	3.9%	121	5.2%
Residential Refrigerator	4	200,281	212,090	111,420	121,146	644,938	3.9%	76	2.5%	80	3.4%
Efficient TV	94	217,324	85,024	108,883	39,746	450,977	2.7%	49	1.6%	38	1.6%
Residential DHW fuel switch	6	141,566	111,378	53,283	43,624	349,851	2.1%	202	6.6%	103	4.4%
Residential Clothes Washer	9	141,074	95,611	56,881	40,299	333,865	2.0%	45	1.5%	34	1.4%
Commercial Ventilation motor	16	101,244	106,466	43,942	40,478	292,130	1.8%	-	0.0%	-	0.0%
Commercial Outdoor Lighting	13L	53,698	131,001	16,011	58,255	258,965	1.6%	41	1.3%	-	0.0%
Commercial Space heat	17	100,525	157,121	-	253	257,899	1.6%	50	1.6%	-	0.0%
Commercial A/C	15	42,374	11,718	143,090	49,765	246,947	1.5%	2	0.1%	96	4.1%
Commercial Indoor Lighting	12	116,576	43,601	53,139	20,774	234,091	1.4%	38	1.2%	52	2.2%
Internal Power Supply	74	33,536	30,321	17,786	14,914	96,557	0.6%	9	0.3%	10	0.4%
VFD Supply fans <10 HP	55	47,122	11,852	23,374	10,965	93,313	0.6%	3	0.1%	1	0.0%
Residential Space heat	5	25,607	29,481	338	494	55,921	0.3%	57	1.9%	-	0.0%
Residential Ventilation	10	10,927	11,890	5,492	5,884	34,192	0.2%	4	0.1%	4	0.2%
VFD Boiler Circulation Pumps < 10 HP	76	12,858	13,041	1,291	656	27,846	0.2%	4	0.1%	-	0.0%
Grocery/Conv. Store Indoor Lighting	87	10,743	7,141	5,342	3,669	26,895	0.2%	4	0.1%	5	0.2%
Internal Power Supply	75	8,940	8,601	4,479	4,231	26,251	0.2%	6	0.2%	5	0.2%
Economizer	60	5,651	5,403	5,223	6,569	22,846	0.1%	-	0.0%	-	0.0%
Commercial Refrigeration	14	7,564	7,385	3,905	3,890	22,744	0.1%	3	0.1%	3	0.1%
Industrial A/C	20	2,971	457	11,125	3,176	17,729	0.1%	-	0.0%	4	0.2%
Refrigeration Economizer	66	7,856	9,728	-	35	17,618	0.1%	3	0.1%	-	0.0%
Residential DHW conserve	8	7,831	4,625	2,304	1,239	15,998	0.1%	2	0.1%	1	0.0%
VFD Boiler feedwater pumps <10 HP	58	5,890	5,029	-	11	10,930	0.1%	1	0.0%	1	0.0%
Residential - Dehumidifier	73	1,555	1,692	3,106	3,329	9,682	0.1%	-	0.0%	2	0.1%
Vending Miser	43	756	4,488	383	2,219	7,845	0.0%	-	0.0%	-	0.0%
Residential A/C	11	54	214	4,138	3,265	7,672	0.0%	-	0.0%	29	1.2%
Door Heater Control	69	3,437	3,739	-	-	7,176	0.0%	1	0.0%	-	0.0%
Industrial Indoor Lighting	18	3,837	577	1,929	285	6,629	0.0%	1	0.0%	2	0.1%
Industrial Indoor Lighting with cooling bonus	64	3,440	520	2,090	363	6,413	0.0%	1	0.0%	3	0.1%
	71	1,530	1,789	817	654	4,790	0.0%	1	0.0%	2	0.1%
Compressed Air - 1-shift (8/5)	44	2,898	-	1,456	-	4,354	0.0%	1	0.0%	2	0.1%
Residential DHW insulation	7	1,366	1,487	687	736	4,275	0.0%	-	0.0%	-	0.0%
Evaporator Fan Control	68	1,238	1,661	584	734	4,217	0.0%	-	0.0%	-	0.0%
VFD Exhaust fans <10 HP	57	1,807	893	652	691	4,043	0.0%	1	0.0%	-	0.0%
Residential Outdoor Lighting	2	342	835	102	372	1,652	0.0%	-	0.0%	-	0.0%
Pool Pump	100	-	-	920	482	1,403	0.0%	-	0.0%	1	0.0%
Standby Losses - Home Office	97	50	67	25	33	176	0.0%	-	0.0%	-	0.0%
	93	79	28	46	17	170	0.0%	-	0.0%	-	0.0%
TOTAL - NET CUSTOM MEASURES		6,484,840	4,685,148	3,108,989	2,179,541	16,458,519	100.0%	3,068	100.0%	2,348	100.0%