Power Rate Design Impact Model 1.0

The Customer Impact model builds on the similar model used for evaluating customer impacts each rate case. These can be found on bpa.gov under the applicable Rate Case page under Models and Datasets.

To use the model, there are a number of settings one can alter. The Init sheet contains most of these toggles, but there are also other places in the model a user might want to use, so we will walk through where to put data in and why.

Init:

Setting	Value			Code	Name				
Start Year	**2024**	Forecast		10005	Alder Mutual	0	0	0	Yes
				10015	Asotin County PUD #1	0	0	0	Yes
Tier 1 System Capability				10024	Benton County PUD #1	0	0	0	Yes
2022	6,736.359			10025	Benton REA	0	0	0	Yes
2024	7,063.365			10027	Big Bend Elec Coop	0	0	0	Yes
				10029	Blachly Lane Elec Coop	0	1	0	Yes
Include Tier 2 Load Shaping in Effective Rate				10044	Canby, City of	0	0	0	Yes
	Yes			10046	Central Electric Coop	0	1	0	Yes
				10047	Central Lincoln PUD	0	0	0	Yes
				10055	Albion, City of	0	0	0	Yes
Include Block Shaping?	**Yes**			10057	Ashland, City of	0	0	0	Yes
				10059	Bandon, City of	0	0	0	Yes
Scenario Selection				10061	Blaine, City of	0	0	0	Yes
Status Quo Demand Revenues	Peak-CDQ-aHLH			10062	Bonners Ferry, City of	0	0	0	Yes
Alternative 1 Demand Revenues	Peak-aMW			10064	Burley, City of	0	0	0	Yes
Alternative 2 Demand Revenues	Peak-aHLH			10065	Cascade Locks, City of	0	0	0	Yes
Alternative 3 Demand Revenues	TTSL			10066	Centralia, City of	0	0	0	Yes
Alternative 4 Demand Revenues	Peak-aMW			10067	Cheney, City of	0	0	0	Yes
				10068	Chewelah, City of	0	0	0	Yes
Revenue Requirement Capacity Assumption				10070	Declo, City of	0	0	0	Yes
	37%			10071	Drain, City of	0	0	0	Yes
Use Billing data for LSTU, IRD, LDD?				10072	Ellensburg, City of	0	0	0	Yes
	No			10074	Forest Grove, City of	0	0	0	Yes
Use Embedded Cost for Demand?				10076	Heyburn, City of	0	0	0	Yes
	No			10078	McCleary, City of	0	0	0	Yes
Use Marginal Cost for PLVS?				10079	McMinnville, City of	0	0	0	Yes
	No			10080	Milton, Town of	0	0	0	Yes
Include NLSLs in TRL for PLVS?				10081	Milton-Freewater, City of	0	0	0	Yes
	No			10082	Minidoka, City of	0	0	0	Yes
Include Slice Resource in TRL for PLVS?				10083	Monmouth, City of	0	0	0	Yes
	Yes			10086	Plummer, City of	0	0	0	Yes
				10087	Port Angeles, City of	0	0	0	Yes
				10089	Richland, City of	0	0	0	Yes

Start Year – Sets the start year assumption for a two year period of model evaluation. Current options include 2022 and 2024, where 2022 will use actual billing data and 2024 will use forecast TRMbd case from the BP-24 rate case.

Tier 1 System Capability – Enter the applicable RT1SC value for the size of Tier 1 system. These for now should be left stagnant, because there are calculations which occur externally in the TRMbd rate case model which uses this value (for example, RHWMs).

Include Tier 2 Load Shaping in Effective Rate – use a value of Yes. This will exclude the Tier 2 load shaping amounts (sales above RHWM but not served by Tier 2 or self-supply).

Include Block Shaping? – This will enable the functionality to add shaping to the Block amount assumptions. Leave on for yes as default.

Scenario Selection – Leave these as default.

Revenue Requirement Capacity Assumption – Current assumption is 37%, though the model will allow for this value to be changed.

Use Billing data for LSTU, IRD, LDD? – Keep this value as No, it is used for troubleshooting and internal verification.

Use Embedded Cost for Demand? – this toggle may be useful – allows for toggling the demand rate between and embedded cost and marginal input.

Use Marginal Cost for PLVS? – this does the same as above for demand but in reverse. The default assumption is No, and this applies the embedded cost to the PLVS product.

Include NLSLs in TRL for PLVS? – This options enables the users with NLSLs to toggle on and off the PLVS rate depending on whether the NLSL load would be included on not. Keep the default value as No. If the default value is set to Yes, please note that any NLSL service including PLVS would be under a different rate schedule than PF, and this model assesses only Tier 1 PF.

Include Slice Resource in TRL for PLVS? – This allows the user to exclude Slice Resource from the TRL used as the basis for PLVS charges.

PLVS toggles -- adjust these values to Yes for a Block customer who plans on purchasing PLVS from BPA.

BlockShaping

ections	Shaping Capacity (MW demand)													HLH/LLH Shape Adjustment (% HLH shift)									
	10	11	12	1	2	3	4	5	6	7	8	9		10	11	12	1	2	3	4	5	6	7	8
10005 Alder Mutual	0	0	0	0	0	0	0	0	0	0	0	0	10005	1	1	1	1	1	1	1	1	1	1	1
10015 Asotin County PUD #1	0	0	0	0	0	0	0	0	0	0	0	0	10015	1	1	1	1	1	1	1	1	1	1	1
10024 Benton County PUD #1	0	0	0	0	0	0	0	0	0	0	0	0	10024	1	1	1	1	1	1	1	1	1	1	1
10025 Benton REA	0	0	0	0	0	0	0	0	0	0	0	0	10025	1	1	1	1	1	1	1	1	1	1	1
10027 Big Bend Elec Coop	0	0	0	0	0	0	0	0	0	0	0	0	10027	1	1	1	1	1	1	1	1	1	1	1
10029 Blachly Lane Elec Coop	0	0	0	0	0	0	0	0	0	0	0	0	10029	1	1	1	1	1	1	1	1	1	1	1
10044 Canby, City of	0	0	0	0	0	0	0	0	0	0	0	0	10044	1	1	1	1	1	1	1	1	1	1	1
10046 Central Electric Coop	0	0	0	0	0	0	0	0	0	0	0	0	10046	1	1	1	1	1	1	1	1	1	1	1
10047 Central Lincoln PUD	0	0	0	0	0	0	0	0	0	0	0	0	10047	1	1	1	1	1	1	1	1	1	1	1
10055 Albion, City of	0	0	0	0	0	0	0	0	0	0	0	0	10055	1	1	1	1	1	1	1	1	1	1	1
10057 Ashland, City of	0	0	0	0	0	0	0	0	0	0	0	0	10057	1	1	1	1	1	1	1	1	1	1	1
10059 Bandon, City of	0	0	0	0	0	0	0	0	0	0	0	0	10059	1	1	1	1	1	1	1	1	1	1	1
10061 Blaine, City of	0	0	0	0	0	0	0	0	0	0	0	0	10061	1	1	1	1	1	1	1	1	1	1	1
10062 Bonners Ferry, City of	0	0	0	0	0	0	0	0	0	0	0	0	10062	1	1	1	1	1	1	1	1	1	1	1
10064 Burley, City of	0	0	0	0	0	0	0	0	0	0	0	0	10064	1	1	1	1	1	1	1	1	1	1	1
10065 Cascade Locks, City of	0	0	0	0	0	0	0	0	0	0	0	0	10065	1	1	1	1	1	1	1	1	1	1	1
10066 Centralia, City of	0	0	0	0	0	0	0	0	0	0	0	0	10066	1	1	1	1	1	1	1	1	1	1	1
10067 Cheney, City of	0	0	0	0	0	0	0	0	0	0	0	0	10067	1	1	1	1	1	1	1	1	1	1	1
10068 Chewelah, City of	0	0	0	0	0	0	0	0	0	0	0	0	10068	1	1	1	1	1	1	1	1	1	1	1
10070 Declo, City of	0	0	0	0	0	0	0	0	0	0	0	0	10070	1	1	1	1	1	1	1	1	1	1	1
10071 Drain, City of	0	0	0	0	0	0	0	0	0	0	0	0	10071	1	1	1	1	1	1	1	1	1	1	1
10072 Ellensburg, City of	0	0	0	0	0	0	0	0	0	0	0	0	10072	1	1	1	1	1	1	1	1	1	1	1
10074 Forest Grove, City of	0	0	0	0	0	0	0	0	0	0	0	0	10074	1	1	1	1	1	1	1	1	1	1	1
10076 Heyburn, City of	0	0	0	0	0	0	0	0	0	0	0	0	10076	1	1	1	1	1	1	1	1	1	1	1
10078 McCleary, City of	0	0	0	0	0	0	0	0	0	0	0	0	10078	1	1	1	1	1	1	1	1	1	1	1
10079 McMinnville, City of	0	0	0	0	0	0	0	0	0	0	0	0	10079	1	1	1	1	1	1	1	1	1	1	1
10080 Milton, Town of	0	0	0	0	0	0	0	0	0	0	0	0	10080	1	1	1	1	1	1	1	1	1	1	1
10081 Milton-Freewater, City of	0	0	0	0	0	0	0	0	0	0	0	0	10081	1	1	1	1	1	1	1	1	1	1	1
10082 Minidoka, City of	0	0	0	0	0	0	0	0	0	0	0	0	10082	1	1	1	1	1	1	1	1	1	1	1

Input on this tab under your respective utility the amounts of shaping capacity (in MW) for each month being considered, and for the amount believed to be possible. Similarly, you can increase of decrease the HLH/LLH shaping by inputting a value from 0.1 to 1.5 or so (you cannot go too high because there may not be enough LLH energy to take out of LLH and put into HLH). As an example, a value of 1.1 you place 10% more energy in HLH than LLH on an aMW basis.

Orange, Blue and Grey tabs are fixed inputs:
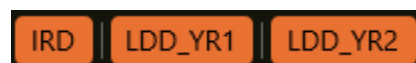
IRD **LDD_YR1** **LDD_YR2** Actual values for discount programs; only used when model is set to Actuals mode.

TRMbdActuals_TOCA inputs from RHWM process needed to calculated the load shaping true-up when the model is set to Actuals mode.

TRMbdForecast_TOCA | **TRMbdForecast_TRL** | **TRMbdForecast_NLSL** | **TRMbdForecast_Tier1_Diurnal** | **TRMbdForecast_LoadShp** | **TRMbdForecast_CSP** | **TRMbdForecast_Existing** | **TRMbdForecast_CDQ**

**These take inputs from the TRMbd. If one wanted to assess the cost of switching to a different product, they could go to BPA.gov, download the TRMbd model from the BP-24 rate case Models and Datasets section, adjust the applicable values on the Init tab to change the customer assumption from Slice to Load Following, or block if removing slice but retaining Block by changing the Slice % to zero – but keeping Slice = 1, and set model Lock to "No". Then paste over the values in the above sheets with the modified resulting inputs from TRMbd.

Actuals Rates | **Forecast Rates** | **TOCA_Actuals** These are rates from the RAM model for each respective rate case, with a couple of user inputs for the embedded cost of capacity assumption.

LSTU_22 | **LSTU_23** These are actual calculations of the load shaping true-up.

ALF_TRLdata | **BillingActual_CSP** | **BillingActuals_Energy** | **Billing totals** | **BillingCDQ**
These are billing and ALF inputs for the Actuals mode.

PLVS This does the simple calculation of the PLVS rate. TRL amounts are live with the election for service (default is no block customers taking it); but the capacity assumption is not live yet.

StagingTRM | **StagingPRDM** The aforementioned inputs are all fed into these two staging tables and used for the rate calculation in the model.

Rate Calculations

Status Quo this sheet calculated customer charges, load shaping, demand, and any true-ups or discounts to get at effective rates under the TRM rate construct. If the model is set to Forecast model, then these effective rates will match the status quo scenario calculations on the final report pages and customer dashboard. (see below)

Demand Revenues | **PLVS Revenues** | **Energy Rates** | **Energy Revenues** | **Energy Revenues PLVS** | **Customer Tier 1 Energy**
these sheets perform the scenario based calculations for Status Quo and the four alternatives using a diurnal rate setting approach. They feed into the Effective Rates tab below.

Effective Rates This tab is effectively the results tab and performs relevant ranking used in the graphs at the end of the model.

It is separates into Effective Rates (pink), Rate Impacts (deviation for each alternative from the Status Quo (orange), and the raking columns for sorting customers for the graphs (green and blue). Calculation for the true-up necessary to tie out to the TRM construct are in columns D through I. Column A shows red numbers for the deviation from effective rates on the Status Quo tab (described above).

CustomerDashboard This is hopefully a very useful tab, because it will allow the customer to look at impacts with a greater degree of visibility.

First, select the customer you want to view:

Then look at:

Rate calculations under the TRM customer charges + load shaping are included in the first few columns. NOTE: the TRM – diurnal rates equivalency is dependent upon being in "Forecast" mode and having Status Quo selected in cell M3 and Demand Only is selected in cell N3.

Then there are two sets of columns, one with a right summary and another with a left summary.

Select the applicable values in the gold toggles to compare one scenario to another. The first toggle selects the scenario, and the second toggle sets rates with or without a PLVS program.

"Demand Only" is without PLVS, and "Demand plus PLVS" is with PLVS active.

Diurnal Energy Rates with Demand

| Status Quo | Demand and I | Impact RANK: | **N/A** | | | | |

| Status Quo | | | | | | | |

HLH	LLH	Demand	PLVS	LDD Discount	IRD Discount	Fixed Customer Charge	Tier 1 True-up
$/MWh	$/MWh	$ per kW-Mo	$/MWh	%	$/MWh		$/MWh
37.84	23.04	10.37	2.019358	0.0671	(11.57)	-	9.87
30.43	21.52	8.75	2.019358	0.0671	(11.57)	-	9.87
51.76	42.82	13.39	2.019358	0.0671	(11.57)	-	9.87
40.01	26.86	10.84	2.019358	0.0671	(11.57)	-	9.87
40.45	32.14	10.93	2.019358	0.0671	(11.57)	-	9.87
25.20	25.37	7.62	2.019358	0.0671	(11.57)	-	9.87
10.55	11.80	4.43	2.019358	0.0671	(11.57)	-	9.87
8.34	6.47	3.95	2.019358	0.0671	(11.57)	-	9.87
8.00	0.46	3.88	2.019358	0.0671	(11.57)	-	9.87
45.73	27.05	12.08	2.019358	0.0671	(11.57)	-	9.87
61.65	39.06	15.54	2.019358	0.0671	(11.57)	-	9.87
48.83	34.31	12.75	2.019358	0.0671	(11.57)	-	9.87
37.84	23.04	10.37	2.019358	0.0675	(11.57)	-	9.87
30.43	21.52	8.75	2.019358	0.0675	(11.57)	-	9.87
51.76	42.82	13.39	2.019358	0.0675	(11.57)	-	9.87
40.01	26.86	10.84	2.019358	0.0675	(11.57)	-	9.87
40.45	32.14	10.93	2.019358	0.0675	(11.57)	-	9.87
25.20	25.37	7.62	2.019358	0.0675	(11.57)	-	9.87
10.55	11.80	4.43	2.019358	0.0675	(11.57)	-	9.87
8.34	6.47	3.95	2.019358	0.0675	(11.57)	-	9.87
8.00	0.46	3.88	2.019358	0.0675	(11.57)	-	9.87
45.73	27.05	12.08	2.019358	0.0675	(11.57)	-	9.87
61.65	39.06	15.54	2.019358	0.0675	(11.57)	-	9.87
48.83	34.31	12.75	2.019358	0.0675	(11.57)	-	9.87
MWh	MWh	kW	MWh	$	MWh		MWh
229,522	140,438	67,959	428,537	#######	-	369,960	0.00
267,902	179,026	95,746	503,457	#######	-	446,928	0.00
336,998	237,861	142,887	633,040	#######	-	574,860	0.00
345,945	233,429	100,746	637,499	#######	-	579,374	0.00
301,292	191,771	64,179	547,463	#######	-	493,063	0.00
276,969	181,726	100,260	516,582	(13,507,656)	-	458,695	0.00
243,446	148,433	118,400	449,920	(5,754,167)	-	391,878	0.00
224,148	144,821	125,472	432,578	(4,176,715)	28,852	368,970	0.00
237,928	145,296	94,970	444,717	(3,238,009)	52,076	383,224	0.00
261,430	162,238	132,261	485,643	(18,923,513)	62,311	423,669	0.00
260,612	145,620	132,096	466,257	(24,750,271)	46,467	406,232	0.00
214,264	143,412	89,905	413,970	(17,366,378)	28,776	357,676	0.00
234,628	134,961	78,329	433,072	(13,675,831)	-	369,590	0.00
268,187	178,939	97,644	508,410	(13,894,184)	-	447,126	0.00
337,671	237,999	144,383	638,756	#######	-	575,670	0.00
346,672	233,677	102,281	643,380	(22,556,711)	-	580,349	0.00

Vs.

			Alternative 1				
HLH	LLH	Demand	PLVS	LDD Discount	IRD Discount	Fixed Customer Charge	Tier 1 True-up
$/MWh	$/MWh	$ per kW-Mo	$/MWh	%	$/MWh		$/MWh
35.15	20.35	10.37	2.019358	0.0671	(11.57)	-	12.56
27.74	18.83	8.75	2.019358	0.0671	(11.57)	-	12.56
49.07	40.13	13.39	2.019358	0.0671	(11.57)	-	12.56
37.32	24.17	10.84	2.019358	0.0671	(11.57)	-	12.56
37.76	29.45	10.93	2.019358	0.0671	(11.57)	-	12.56
22.51	23.28	7.62	2.019358	0.0671	(11.57)	-	12.56
7.86	9.11	4.43	2.019358	0.0671	(11.57)	-	12.56
5.65	3.78	3.95	2.019358	0.0671	(11.57)	-	12.56
5.31	(2.23)	3.88	2.019358	0.0671	(11.57)	-	12.56
43.04	24.36	12.08	2.019358	0.0671	(11.57)	-	12.56
58.96	36.37	15.54	2.019358	0.0671	(11.57)	-	12.56
46.14	31.62	12.75	2.019358	0.0671	(11.57)	-	12.56
35.15	20.35	10.37	2.019358	0.0675	(11.57)	-	12.56
27.74	18.83	8.75	2.019358	0.0675	(11.57)	-	12.56
49.07	40.13	13.39	2.019358	0.0675	(11.57)	-	12.56
37.32	24.17	10.84	2.019358	0.0675	(11.57)	-	12.56
37.76	29.45	10.93	2.019358	0.0675	(11.57)	-	12.56
22.51	23.28	7.62	2.019358	0.0675	(11.57)	-	12.56
7.86	9.11	4.43	2.019358	0.0675	(11.57)	-	12.56
5.65	3.78	3.95	2.019358	0.0675	(11.57)	-	12.56
5.31	(2.23)	3.88	2.019358	0.0675	(11.57)	-	12.56
43.04	24.36	12.08	2.019358	0.0675	(11.57)	-	12.56
58.96	36.37	15.54	2.019358	0.0675	(11.57)	-	12.56
46.14	31.62	12.75	2.019358	0.0675	(11.57)	-	12.56

Charts and graphs for the selected customer show rate impacts and composition of revenues from the customer.

Bar Charts and Cash Flow

| Alternative 1 Histogram | Alternative 2 Histogram | Alternative 3 Histogram | Alternative 4 Histogram | Alternative 1 Rank Order | Alternative 2 Rank Order | Alternativ |

The remaining orange tabs provide graphics for evaluating the impacts across all customers.

Selection of call-out customer on the bar charts is governed by the utility selection on the CustomerDashboard tab.

Included are histograms of the rate impacts for each alternative relative to the Status Quo, bar charts showing the same impacts in order of lowest to highest impacted customers, bar charts showing the percent deviation from Status Quo for each alternative in order of smallest to largest customer, bar charts showing effective rates for each alternative in the lowest-to-highest impact, and cash flow proofs of equivalency (all scenarios collect the same revenue requirement).

Note for the graphs – all graphs by default assume PLVS; however, this option can be disabled by toggling the value in cell A1 on sheets:

| Chart Data | Chart Data (MWh) |

, where the former changes all charts other than the effective rate charts, and the latter changes the effective rate bar charts.