

## Release Notes for Single-Step EPDs for Limousin powered by BOLT

BOLT single-step EPD's for Limousin were released Monday, August 27, 2018. Going forward, these traits will be updated on a weekly basis for all IGS traits. As you may have noticed, the cattle that have a genomic profile are not highlighted in yellow on Monday's release. The genomics are in fact included on the cattle that have been genomically enhanced, which can be verified on the animal's DNA tab. The yellow highlighted designation will return on the screen in a couple of weeks once programming is finished on re-incorporating it back in.

As stated previously in BOLT articles presented throughout the year, you will notice some base change on certain traits. The standard deviation is smaller on the new EPDS. Given the base changes on certain traits like marbling, carcass weight and docility, is important to remember to also look at the animal's percentile ranking along with the EPD. Limousin gets a favorable change in BW, calving ease, stayability, YG, and ribeye. Changes in the carcass weight calculation which are described below, reflect a base change in the CW EPD. Marbling takes a negative base shift of approximately .25 in the BOLT calculation and the base shift for Limousin docility is now 12 versus 19 in the BOLT evaluation. Limousin actually ranks number 1 in the across breed docility evaluation now given the progress the breed has made but the base shifts will require breeders to adjust to the new EPDS.

More detailed explanations of trait adjustments are listed below. Please feel free to call staff with any questions you may have regarding the new single-step BOLT evaluation that will generate and update EPDS on a weekly basis moving forward.

Please note that Gest and SC will continue to be run at Colorado State 2 times per year. Two major changes are reflected in the new BOLT-derived EPDs. Key changes impacting all IGS-run traits are highlighted below.

For all IGS traits, two major changes are reflected in the new BOLT-derived EPDs.

- 1) **Single-Step Incorporation of Genomics** – Formerly, results from genomic tests were blended with an animal's EPD after the bi-annual evaluation was complete. This method required frequent upkeep in the way of periodic recalibration and results only impacted the animal tested, not its progeny nor its ancestors. Going forward, the BOLT-derived EPDs will make use of genomic information along with all pedigree, performance, and progeny information, in one step; thus, eliminating the post-evaluation blending formula. Another crucial difference is that now, even animals who have not been tested will be impacted by genomic test results from relatives – this can cause some major change in non-genotyped animals.
- 2) **Updated External EPDs** – The IGS evaluation makes use of information from externally-supplied EPDs. From time-to-time this information needs to be updated as more information is gathered by the supplying organization and especially as those organizations make changes to their genetic evaluation that impact those EPDs.

Below, you'll find a description of key changes in some of the most commonly asked questions about BOLT EPDS.

**Calving Ease (Direct and Maternal)** – In addition to the changes impacting all traits mentioned above, substantial updates were made that caused some re-ranking for CEM and CED. Tables 1 and 2 show some key differences in rank among the NALF breed categories.

- 1) **Contemporary groups with no variation:** In the past, if calving scores were submitted on heifers and there was no variation in the scores (all 1's, for example), the performance information on those calves was not used. Now, with single-step EPDs powered by BOLT technology, data on animals in contemporary groups without phenotypic variation can be used. For CED and CEM, calving scores from contemporary groups in which none of the heifers

required assistance can be used. This means there is more information available for genetic prediction in the BOLT-powered EPDs, which should mean less bias.

**Table 1: CED Percentile Rank Comparison between Spring 2018 (SP18) and BOLT NCE.**

	Active Sires		Non-Parents		Limousin Active Sires		Limousin Non-Parents		LimFlex Active Sires		LimFlex Non-Parents	
	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18
High	29	29	22	25	24	29	22	25	22	22	22	25
Average	9	11	9	12	7	11	8	12	10	12	10	12
Low	-6	-7	-3	-2	-5	-7	-2	-2	1	2	-3	0
1%	23	21	18	20	19	21	19	21	18	19	17	18
10%	16	15	14	15	12	15	13	16	14	15	14	15
25%	12	13	11	13	9	13	10	13	12	13	12	13
75%	6	9	7	10	4	8	6	9	8	10	8	10

**Table 2: CEM Percentile Rank Comparison between Spring 2018 Cornell (SP18) and BOLT NCE.**

	Active Sires		Non-Parents		Limousin Active Sires		Limousin Non-Parents		LimFlex Active Sires		LimFlex Non-Parents	
	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18
High	15	20	14	18	15	18	13	15	12	20	14	18
Average	5	6	6	6	5	6	6	6	6	7	6	7
Low	-24	-7	-10	-6	-12	-7	-10	-4	-8	-3	-8	-4
1%	12	13	11	12	12	13	11	12	11	12	10	11
10%	9	9	9	9	9	9	9	10	9	9	8	9
25%	8	8	8	8	7	8	8	8	8	8	7	8
75%	4	5	4	5	3	4	4	5	4	5	5	6

### Growth Traits (BW, WW, YW, MK)

- Breed Contrast updates:** Previously, Meat Animal Research Center breed contrast estimates were used. For the BOLT release, IGS-partner data was used for breed contrasts.

**Table 3: BW Percentile Rank Comparison between Spring 2018 Cornell (SP18) and BOLT NCE.**

	Active Sires		Non-Parents		Limousin Active Sires		Limousin Non-Parents		LimFlex Active Sires		LimFlex Non-Parents	
	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18
High	9.4	7.3	10.0	8.0	7.9	9.2	10.0	8.0	6.6	5.4	8.0	7.3
Average	1.1	0.6	1.2	0.8	1.9	1.3	1.4	0.9	0.9	0.7	0.9	0.6
Low	-8.6	-6.1	-7.3	-7.9	-7.6	-6.9	-7.3	-6.9	-6.9	-5.7	-6.5	-6.1
1%	-5.2	-3.1	-3.4	-3.5	-4.2	-4.2	-3.4	-3.6	-3.5	-2.9	-3.3	-3.1
10%	-2	-1.1	-1.2	-1.3	-0.8	-1.2	-1.2	-1.5	-1.0	-1.1	-1.1	-1.1
25%	-0.2	-0.2	0.1	-0.2	0.9	0.3	0.2	-0.2	-0.1	-0.2	0.0	-0.2
75%	2.6	1.5	2.4	1.8	3.2	2.5	2.7	2.1	2.0	1.6	1.9	1.5

**Table 4: WW Percentile Rank Comparison between Spring 2018 Cornell (SP18) and BOLT NCE.**

	Active Sires		Non-Parents		Limousin Active Sires		Limousin Non-Parents		LimFlex Active Sires		LimFlex Non-Parents	
	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18
High	123	108	121	108	123	116	121	103	104	96	117	108
Average	64	64	67	63	64	61	66	62	67	64	68	64
Low	9	26	0	26	17	23	0	27	29	37	0	26
1%	93	84	91	82	92	84	90	81	94	85	92	84
10%	79	74	80	72	79	73	79	71	80	75	81	74
25%	72	69	73	68	71	67	72	67	73	69	75	69
75%	57	59	60	58	56	55	59	57	59	58	61	59

**Table 5: YW Percentile Rank Comparison between Spring 2018 Cornell (SP18) and BOLT NCE.**

	Active Sires		Non-Parents		Limousin Active Sires		Limousin Non-Parents		LimFlex Active Sires		LimFlex Non-Parents	
	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18
High	174	164	182	173	172	164	182	158	162	149	173	166
Average	96	94	98	96	90	92	94	93	103	100	104	101
Low	9	26	0	33	15	26	0	33	57	49	0	37

1%	146	134	136	130	139	133	130	124	146	137	142	134
10%	123	114	119	113	116	112	113	109	124	118	124	118
25%	110	105	109	105	103	102	105	102	114	109	115	108
75%	82	84	87	87	77	81	83	84	91	90	94	92

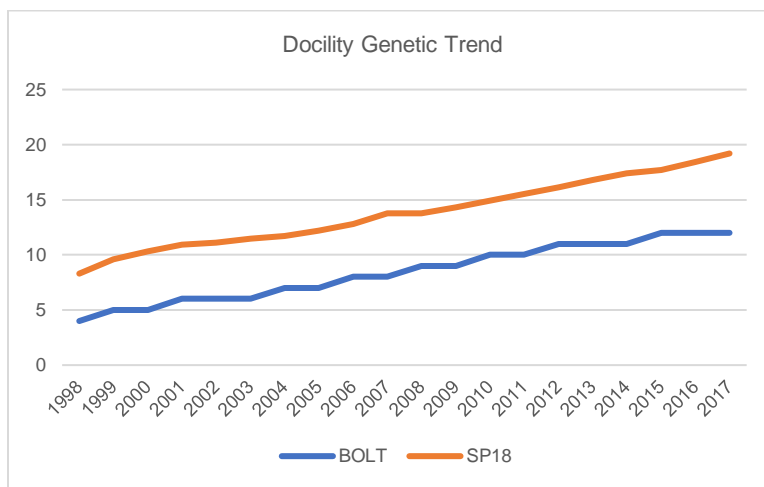
**Table 6: Milk Percentile Rank Comparison between Spring 2018 Cornell (SP18) and BOLT NCE.**

	Active Sires		Non-Parents		Limousin Active Sires		Limousin Non-Parents		LimFlex Active Sires		LimFlex Non-Parents	
	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18
High	49	42	47	39	49	38	47	37	49	42	43	39
Average	25	21	25	21	26	21	26	21	25	22	25	22
Low	0	-7	0	3	1	-7	0	3	5	7	0	4
1%	41	33	37	30	43	33	37	30	41	34	35	31
10%	32	27	31	26	34	27	32	26	31	27	30	26
25%	29	24	28	24	29	24	29	23	28	25	27	24
75%	21	19	22	19	22	18	23	19	21	19	22	20

**Docility** - Until now, Docility has been one of the traits evaluated by Colorado State instead of IGS. Here are the key differences:

- 1) **IGS Multi-Breed Evaluation:** Previously, NALF data was run on its own twice a year. Now, NALF data will be combined with docility scores from all of the other partner breeds for a true multi-breed evaluation.
- 2) **Threshold model to linear model:** Previously, docility was evaluated with a threshold model that combined 1's and 2's into a category called "acceptable" and 3-5 were combined into a category called "unacceptable." Now, a linear model is used whereby 1-6 are used as recorded, therefore the extremes will have more impact.

These changes are reflected in genetic trend and percentile ranks as illustrated in Figure 1 and Table 8 below.



**Figure 1: Docility genetic trend for BOLT and Spring 2018 NCE.**

**Table 7: DOC Percentile Rank Comparison between Spring 2018 Cornell (SP18) and BOLT NCE.**

	Active Sires		Non-Parents		Limousin Active Sires		Limousin Non-Parents		LimFlex Active Sires		LimFlex Non-Parents	
	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18
High	50	29	45	28	50	28	45	27	47	29	41	27
Average	16	11	19	12	17	11	20	12	15	12	17	12
Low	-20	-13	-13	-16	-20	-13	-13	-12	-9	-5	-11	-7

1%	38	23	39	21	39	24	40	21	33	22	32	20
10%	28	18	30	18	29	19	32	18	25	17	26	17
25%	22	15	24	15	23	16	26	16	20	14	21	15
75%	11	8	13	10	11	7	14	9	11	10	13	10

**Carcass Traits:** Major updates to the carcass traits include:

- 1) **True Multi-trait evaluation:** Currently, carcass EPDs are simply an index of the carcass trait and its corresponding ultrasound trait. Going forward, a true multi-trait evaluation with all carcass and ultrasound traits plus weaning weight and post-weaning gain will be used.
- 2) **Updated correlations between carcass and ultrasound traits:** It had been many years since these relationships had been evaluated. For most traits, the correlation between the carcass trait of interest and its underlying ultrasound indicator are lower.

**Table 8:** CW Percentile Rank Comparison between Spring 2018 Cornell (SP18) and BOLT NCE.

	Active Sires		Non-Parents		Limousin Active Sires		Limousin Non-Parents		LimFlex Active Sires		LimFlex Non-Parents	
	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18
High	76	64	73	67	71	60	73	55	68	64	72	67
Average	28	15	29	17	26	10	27	11	32	23	33	24
Low	-30	-22	-22	-20	-19	-22	-22	-20	2	-9	-15	-14
1%	60	47	54	45	57	40	49	34	60	50	57	49
10%	44	30	42	31	41	24	39	22	45	36	45	37
25%	36	22	36	23	33	16	33	16	39	28	39	30
75%	20	6	22	9	18	4	21	5	24	16	26	17

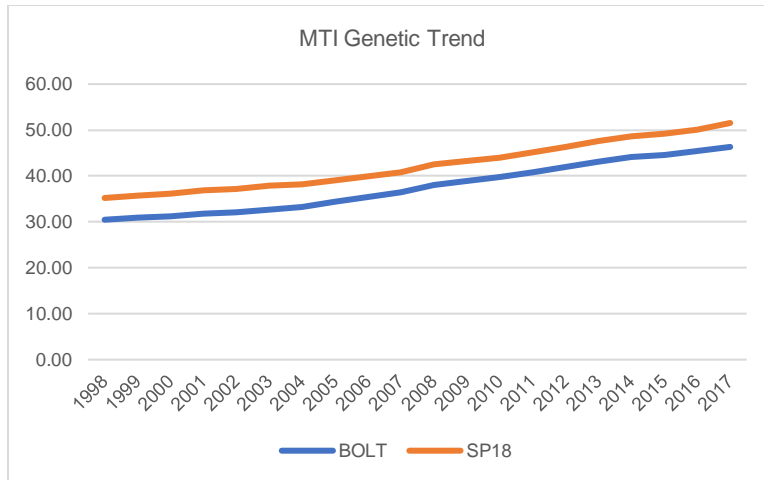
**Table 9 :** RE Percentile Rank Comparison between Spring 2018 Cornell (SP18) and BOLT NCE.

	Active Sires		Non-Parents		Limousin Active Sires		Limousin Non-Parents		LimFlex Active Sires		LimFlex Non-Parents	
	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18
High	1.74	1.83	1.48	1.78	1.74	1.83	1.29	1.78	1.21	1.47	1.48	1.53
Average	0.40	0.98	0.42	0.94	0.43	1.12	0.46	1.10	0.35	0.75	0.36	0.76
Low	-0.40	-0.03	-0.44	-0.03	-0.34	0.53	-0.30	0.47	-0.40	-0.03	-0.44	0.08
1%	1.08	1.56	0.93	1.42	1.11	1.64	0.95	1.47	0.92	1.25	0.87	1.21
10%	0.73	1.31	0.69	1.24	0.76	1.38	0.72	1.30	0.65	1.01	0.63	0.99
25%	0.58	1.17	0.56	1.11	0.61	1.25	0.59	1.20	0.50	0.88	0.49	0.88
75%	0.23	0.80	0.29	0.78	0.26	0.99	0.32	0.99	0.20	0.61	0.23	0.64

**Table 10:** MB Percentile Rank Comparison between Spring 2018 Cornell (SP18) and BOLT NCE.

	Active Sires		Non-Parents		Limousin Active Sires		Limousin Non-Parents		LimFlex Active Sires		LimFlex Non-Parents	
	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18
High	1.86	0.73	1.21	0.89	0.71	0.15	1.21	0.12	1.10	0.73	1.18	0.89
Average	0.03	-0.28	-0.02	-0.20	-0.21	-0.46	-0.16	-0.40	0.20	0.04	0.19	0.04
Low	-0.72	-0.84	-0.83	-0.82	-0.72	-0.84	-0.83	-0.82	-0.46	-0.61	-0.59	-0.59
1%	1.18	0.49	0.63	0.45	0.29	-0.08	0.25	-0.09	0.79	0.56	0.71	0.52
10%	0.58	0.15	0.33	0.18	0.01	-0.29	0.04	-0.23	0.51	0.31	0.45	0.29
25%	0.23	-0.08	0.14	-0.01	-0.11	-0.37	-0.06	-0.32	0.33	0.18	0.32	0.17
75%	-0.26	-0.51	-0.20	-0.42	-0.34	-0.56	-0.27	-0.50	0.04	-0.11	0.05	-0.10

\$MTI – Remember, MTI contains weaning and post-weaning growth, yield grade, and marbling. So, any changes impacting those EPDs will also impact \$MTI.



**Figure 2:** \$MTI genetic trend for BOLT and Spring 2018 NCE.

**Table 11:** \$MTI Percentile Rank Comparison between Spring 2018 Cornell (SP18) and BOLT NCE.

	Active Sires		Non-Parents		Limousin Active Sires		Limousin Non-Parents		LimFlex Active Sires		LimFlex Non-Parents	
	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18	BOLT	SP18
High	124.08	80.53	96.59	84.28	71.92	63.07	94.84	62.30	90.74	80.53	96.59	84.28
Average	51.77	43.61	50.82	46.07	43.41	37.90	45.85	39.94	57.85	53.68	58.24	53.88
Low	21.12	20.67	22.62	23.10	21.12	20.67	22.62	23.10	35.23	35.60	22.78	29.66
1%	94.20	68.61	74.30	68.19	63.17	53.99	62.09	53.00	79.09	72.13	77.68	71.17
10%	71.11	57.61	63.28	58.63	53.35	45.64	54.40	47.25	69.25	63.92	67.85	62.70
25%	59.59	50.19	57.01	52.37	48.02	41.75	50.33	43.69	63.31	58.42	62.96	58.27
75%	41.04	35.96	43.86	39.18	38.14	33.53	40.79	35.82	51.68	48.17	53.07	49.12

Change can be difficult and often leads to many questions – We hope this trait-by-trait primer has helped answer some questions you may have. The goal with this change is to provide you and your commercial customers with the best-available selection tools to allow you make the best possible decisions to move your operations forward. For a good reference on the improvement in predicting future progeny performance offered by the release of weekly BOLT-powered EPDS, please see the article on page 76 of your June/July Issue of **Limousin Today**.