



# Modernized LPI



**Paul Meyer**  
Member, Genetic Evaluation Board

## Main Goals

The main goal of a modernized LPI was to expand from the three current components within LPI to include the new traits related to sustainability. Additional objectives included eliminating the “mathematical formula” nature of the communications and to create official subindexes to be published on their own as well as combined in LPI.

## Production

Consideration was given to the long-term nature of genetic selection decisions compared to year-over-year variations in the milk pricing system for dairy farmers. The decision was made to maintain Fat to Protein ratio of 60:40 for Holsteins (and 60:40 for Ayrshire with 50:50 for Jersey, Brown Swiss, Guernsey and Milking Shorthorn) and to focus on yields rather than fat and/or protein deviations.

## Longevity & Type

Minimal changes were to be the intention of the current Durability component in LPI. The decision was made to move Hoof Health into Health & Welfare subindex of the New LPI. The only key discussion point was to reduce the relative weight on Dairy Strength to 5% and increase weight on Feet & Legs to 33%.

## Health & Welfare

Lactanet contracted an external company, AbacusBio, to estimate relative economic weights to be placed on the various health traits. Consideration was given to the heritability, prevalence rate and treatment costs associated with each health trait.

## Reproduction

The decision was made to separate out the Health & Fertility component into two subindexes (Health & Welfare and Reproduction). For the Reproduction Index (RI), the focus is on Daughter Fertility, but it also includes Daughter Calving Ability.

## Milkability

The new subindex called Milkability will include emphasis on Milking Speed and Temperament. It will also include specific Mammary traits related to attributes of the udder and teats desired for milking efficiency.

## Environmental Impact

The decision was made to adopt the relative economic weights estimated by AbacusBio which had been presented at the Open Industry Session in October 2024.

## Relative Weights in Current LPI

After analysis at Lactanet it was confirmed that there had been a gradual drift away from the desired 40:40:20 weights to something closer to 49:34:17 for Holstein sires because of an expanding Standard Deviation for Fat. This problem is no longer an issue with the modernized LPI starting April 2025 because each subindex is standardized to a common scale (Average=500, SD=100) before applying the relative weights for LPI. This adjustment will contribute to how bulls will re-rank when moving from the current to new LPI.

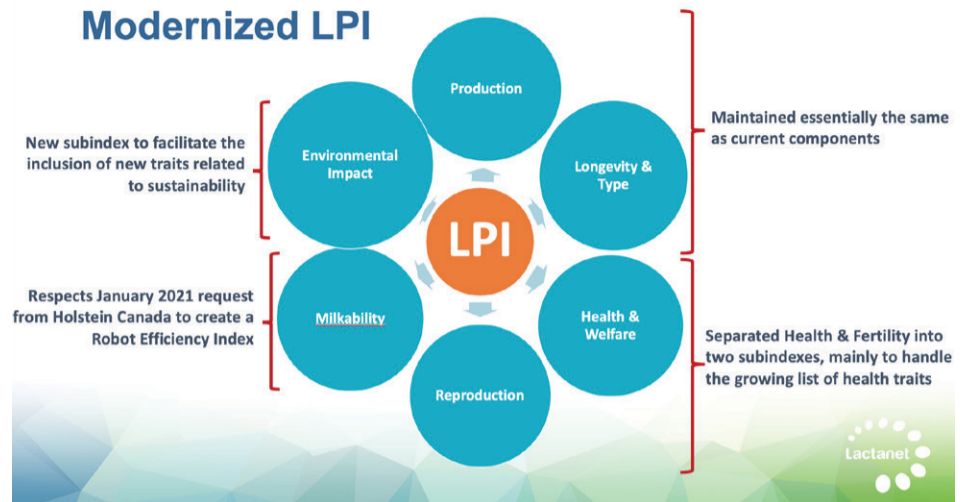
## GEB Adjustments

The GEB recommended some changes compared to the proposed LPI formula presented at the Open Industry Session in October 2024:

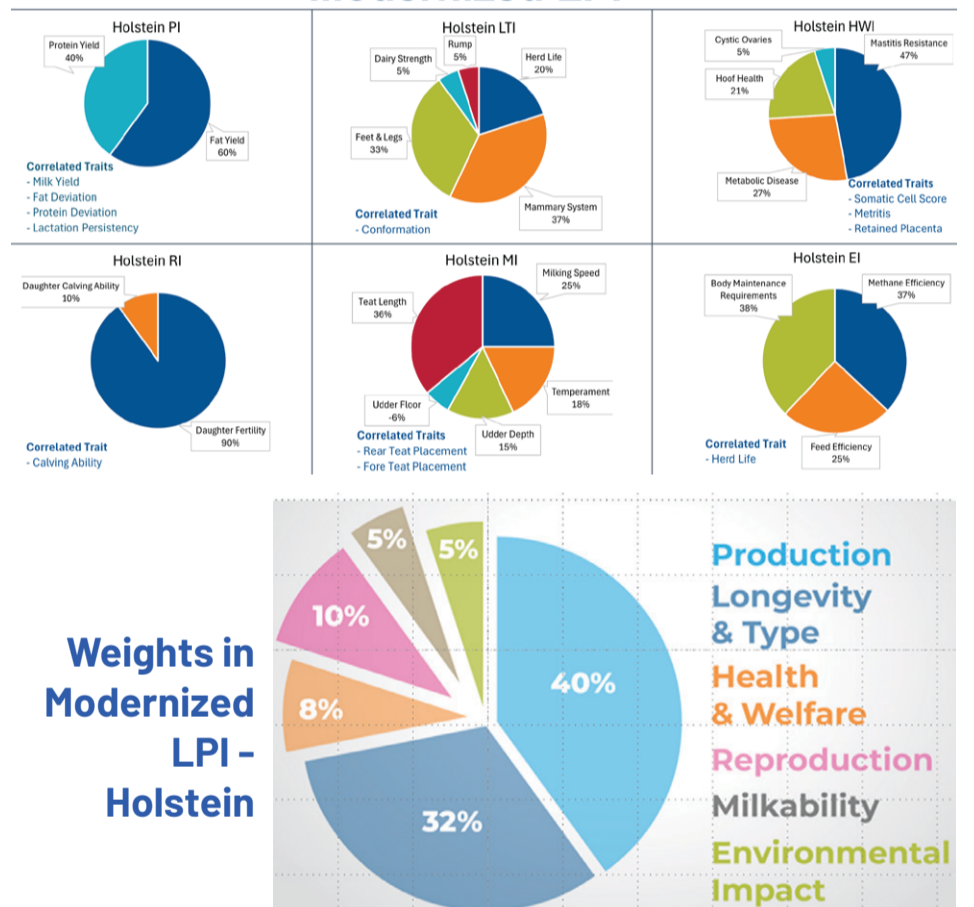
1. Maintain Production at 40% as intended in the current LPI
2. Move relative emphasis of Production to Longevity & Type from the proposed 60:40 to 55:45
3. Keep weight of health traits similar to current LPI (8% instead of current 7%)
4. Reduce weight on the new subindexes (MI and EI) to 5% each.

## Managing the Change

The new modernized LPI will be officially introduced with the genetic evaluation release on April 1, 2025. Results from December 2024 parallel run shows change in Holstein LPI values can experience very significant change ( $\pm 300$  points), although for the vast majority of bulls the change is much less significant.



## Modernized LPI



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emgoothof@gmail.com

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